supported by the facts detailed in this and my former papers, so far as they deal with Birds (and with the one Mammal used). Professor Poulton's suggestion that animals may be forced by hunger to eat unpalateable forms is also more than confirmed, as the unpalateable forms were commonly eaten without the stimulus of actual hunger—generally, also, I may add, without signs of dislike.

To future experimenters I would offer the following hints derived from my experiences as detailed in this series of papers.

1. Use animals at liberty for experimenting with if possible.

2. If these are not available, confine your subjects singly, and feed them well and *naturally*, letting them be neither hungry nor pampered. Cages should be of portable size (about two feet every way) and made (for birds) of half-inch mesh wire netting with plain wooden floor without a tray. This is to prevent insects getting out or being concealed.

3. Use wild-caught specimens in preference to hand-reared ones.

4. *Remember that the best and often the only way to determine an animal's tastes is to offer it a choice.*

A List of the Butterflies of Bali, Lombok, Sambawa and Sumba.—By Lionel de Nicéville, F.E.S., C.M.Z.S., *&c.*, *and* H. J. Elwes, F.R.S., F.L.S., F.Z.S., F.E.S.

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The Islands of Bali, Lombok and Sambawa in the Malayan or Eastern Archipelago extend almost in a straight line from Java on the west to Flores on the east; Sumba or Sandalwood Island lies to the south of Flores; all the islands are adjacent, with narrow straits between them. In continuation of this line of islands from west to east are Flores, Adanara, Ombai and Wetter, with Timor, the largest island of them all, lying to the south of the two latter. Herr J. Röber in Tijd. voor Ent., vol. xxxiv, pp. 261-322 (1891), has written a paper on the butterflies of Flores, Wetter, and Timor; while Mynheer P. C. T. Snellen has in the same periodical, vols. xxxiii, p. 98 (1890), and xxxiv, p. 229 (1891), described the butterflies of Flores. Unfortunately neither of the present writers possesses any considerable collections of butterflies from any of these islands, but which should certainly be compared with those given in this paper. As far as possible we have brought together

the names of all the species recorded from the islands dealt with. This paper is mainly based on the collections made by Mr. William Doherty in Bali, Lombok, Sambawa and Sumba in Elwes' possession, while Herr H. Fruhstorfer has kindly sent de Nicéville some seventy-nine species collected by himself in Lombok. All species recorded from any of the islands taken together considered herein not seen from any one of them by the writers are indicated by an asterisk (*) prefixed to their names. The number of species recorded from each island in this paper is as follows:—

Bali, 201.	Sambawa, 181.
Lombok, 189.	Sumba, 158.

These numbers are remarkably even, but they shew a steady diminution as one proceeds from west to east. Java has at least 500 distinct species of butterflies, Sumatra still more.

Mr. Doherty records about 135 species from Sambawa, several of which, however, he could not name as he had lost the specimens. For instance, at the end of his paper he writes: "My Sumbanese *Hesperiidæ* have suffered more than any other family, and I have been compelled to omit a number of species, a *Halpe*, two *Parnaras*, a *Parata*, etc." On page 157 of his paper he says he obtained about 140 species from Sambawa and Sumba.

Mr. Doherty numbered the species he obtained from Sumba, the total being 130, but of these one species, *Stictoplœa lacordairei*, Moore, was inadvertently entered as from Sumba, while it really was obtained in Sambawa. In counting up the number of species he mentions, the total is 140 (omitting the *Euplœa*), so that there were eleven species he was unable to name for want of specimens when writing his paper.

Dr. Pagenstecher in his first paper on the butterflies of Sumba records 34 species only as received by him, but several of these are not included in Mr. Doherty's list.

Dr. Pagenstecher in his second paper records 57 species from Sambawa, and 88 species from Sumba, many of these being new records. His total from both islands is 110 species.

Mr. Fruhstorfer names 176 species from Lombok, and a "*Narathura*" and two *Arrhopalas* are unnamed, a total of 179 species.

Mr. Fruhstorfer gives 28 species from Bali, of which he described three as new.

Between the islands of Bali and Lombok is found the deep depression in the sea-floor which is generally known as "Wallace's Line," and is supposed to faunistically divide the Indo-Malayan and Austro-Malayan regions. In the three islands of Lombok, Sambawa and Sumba dealt with in this paper which lie to the east of this line, there

is hardly any trace of an Australian element, the butterflies being almost entirely of Indo-Malayan types. The most conspicuous butterflies of an Austro-Malayan type are *Melanitis constantia*, Cramer, from Sambawa and Sumba, *Acræa andromacha*, Fabricius, from Sumba, *Junonia villida*, Fabricius, from Sumba, *Charaxes jovis*, Staudinger, from Sambawa and Sumba, *Charaxes ocellatus*, Fruhstorfer, from Lombok, *Huphina temena*, Hewitson, from Lombok, Sambawa, and Sumba, and *Papilio canopus*, Westwood, var. *umbrosus*, Rothschild, from Sambawa, and var. *sumbanus*, Rothschild, from Sumba.

The only papers relating to Sumba and Sambawa are:—

1. "The Butterflies of Sumba and Sambawa, with some account of the Island of Sumba," by William Doherty, Journ. A. S. B., vol. lx, pt. 2, pp. 141–197, pl. ii (1891).

2. "Über einige Schmetterlinge von der Insel Sumba," by Dr. Arnold Pagenstecher, Jahr. des Nass. Vereins für Natur., vol. xlvii, pp. 52–58 (1894).

3. "Über die Lepidopteren von Sumba und Sambawa," by Dr. Arnold Pagenstecher, Jahr. des Nass. Vereins für Natur., vol. xlix, pp. 95–170, pls. i, ii, and iii (1896).

Mr. H. Fruhstorfer has recently published a paper on the butterflies of Lombok in the Berl. Ent. Zeitsch., vol. xlii, pp. 1–14 (1897), entitled "Aufzählung der von mir auf der Insel Lombok im Jahre 1896 gefangenen Rhopaloceren;" another on the butterflies of Bali in Stet. Ent. Zeitung, vol. lviii, p. (1897), entitled "Liste von Rhopaloceren der Insel Bali;" and lastly "Rhopalocera Lombokiana," in Berl. Ent. Zeitsch., vol. xlii, p. 119 (1897).

Family NYMPHALIDÆ.

Subfamily Danainæ.

This subfamily has been arranged in the order given by Mr. F. Moore in "A Monograph of the *Limnaina* and *Euplœina*" in the Proceedings of the Zoological Society of London for 1883, pp. 201–324. It is a little remarkable that no species of *Nectaria*, *Hestia*, *Gamana*, and *Ideopsis* appear to occur in the islands dealt with here.

1. Danais (Radena) vulgaris, Butler.

Sambawa (*Doherty*). Mr. Doherty says that a *Radena* occurring in Sambawa "Appears to be a representative of *R. vulgaris*, and is common everywhere. I have now no specimens, and am unable to compare it with its allies." On a subsequent visit to the island, Doherty obtained it again, and there are two pairs in Elwes' collection, who notes that

"They have the markings paler and on the hindwing broader than in Javan specimens."

2. Danais (Radena) juventa, Cramer.

Bali (*Doherty*), Lombok (*Moore*, *Doherty* and *Fruhstorfer*), Sambawa? (*Doherty*). Doherty records a *Radena* from Sambawa, and says it "Is very close to the Javanese *R. juventa*, and is confined to the higher country, though I have taken it as low as 1,500 feet. I have now no specimens, and am unable to compare it with its allies." In Elwes' collection there are specimens of this species from Bali, Lombok and Sambawa collected by Doherty, and Fruhstorfer also records it from Sumbawa.

3. *Danais (Radena) obertheurii, Doherty.

Sumbawa (*Pagenstecher*), Sumba (*Doherty* and *Pagenstecher*).

4. *Danais (Radena) kambera, Doherty.

Sumba (*Doherty*).

5. Danais (Tirumala) limniace, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Fruhstorfer records three species of the subgenus *Tirumala* from Lombok—*D.* (*T.*) *melissa hamata*, MacLeay, *D.* (*T.*) *limniace conjuncta*, Moore, and *D.* (*T.*) *limniace donia*, Fruhstorfer. As regards the first of these it has always been held that it is confined to Australia. Its coloration is very deep blue, and it is a well-marked species. Mr. Fruhstorfer's identification is probably erroneous. The second species is restricted by the describer to Java, but is in our opinion an absolute synonym of *D. limniace*; Mr. Moore not admitting that the last-named species is found in Java. The third species is described in Berl. Ent. Zeitsch., vol. xlii, p. 120 (1897). All our specimens of *Tirumala* from Lombok are certainly *D. limniace*. Mr. Fruhstorfer gives both *D. hamata* and *D. limniace* from Sumbawa, and *D. hamata*, *D. limniace* and *D. donia* from Sumba.

6. *Danais (Tirumala) melissa, Cramer.

Sambawa and Sumba (*Doherty*). Dr. Pagenstecher in his first paper records this species under the name of *D. hamata*, Maclay, from Sumba. Mr. Moore restricts this species to Java.

7. *Danais (Tirumala) gautama, Moore.

Sumba? (*Doherty*). Mr. Doherty notes, "I also recorded a form of *D. gautama* in Sumba, but no specimens have turned up."

8. Danais (Tirumala) septentrionis, Butler.

Lombok (*Fruhstorfer*). Fruhstorfer does not record this species from Lombok, though it certainly is found there. Perhaps he has identified it as *D. melissa hamata*, MacLeay.

9. *Danais (Nasuma) haruhasa, Doherty.

Lombok (*Fruhstorfer*), Sambawa (*Doherty* and *Fruhstorfer*). Fruhstorfer says that *D. erebus*, Röber, from Ceram, Goram and Flores, described in the same year as *D. haruhasa*, is the same species.

10. *Danais (Nasuma) taimanu, Doherty.

Sumba (*Doherty*).

11. Danais (Limnas) chrysippus, Linnæus.

Lombok (*Moore*), Sambawa, Sumba (*Doherty*). Mr. Doherty notes that his specimens are somewhat intermediate between typical *D. chrysippus* and *D. bataviana*, Moore. Mr. Elwes says that of five specimens from Sambawa in his collection, four are dark-coloured like those from Bali and Lombok, and one female is paler, so that he considers *D. bataviana* to be an inconstant variety of *D. chrysippus*. All the specimens of this species in de Nicéville's collection from Lombok are quite constant and are typical *D. bataviana*.

12. Danais (Limnas) bataviana, Moore.

Bali (*Doherty*), Bali, Lombok (*Fruhstorfer*). This species can typically be recognised by the dark ferruginous colour of the ground on the upperside of both wings in both sexes. The markings are quite as inconstant as are those in *D. chrysippus*, Linnæus. Mr. Moore restricts it to Java.

13. *Danais (Salatura) plexippus, Linnæus.

Sambawa, Sumba (*Doherty* as *D. genutia*, Cramer). Mr. Doherty says his specimens are intermediate between typical *D. genutia*, Cramer (*plexippus*), and *D. intensa*, Moore. We think it highly improbable that typical *D. plexippus* is found in these islands.

14. Danais (Salatura) intensa, Moore.

Lombok (*Moore* and *Fruhstorfer*). We have very numerous specimens of this species from Lombok which are quite typical *D. intensa*. It is, we think, almost certain that the Sambawa and Sumba species (see above) are also *D. intensa* rather than *D. plexippus*. Mr. Fruhstorfer describes a *D.* (*Salatura*) *genutia partita*, from Lombok and Sambawa,

in Berl. Ent. Zeitsch., vol. xlii, pp. 119, 121 (1897), but our Lombok specimens do not appear to us to differ from typical *D. intensa*, from Java, Lombok and Borneo (*Moore*).

15. Danais (Salatura) litoralis, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Fruhstorfer places this species in one paper as a synonym of *D. affinis*, Fabricius, var. *a*, *hegesippinus*, Röber, from Bonerate and Kisser Islands, described in the same year as Doherty's species, in his last paper he restricts *D. hegesippinus* to Lombok and Sambawa, and records *D. litoralis* from Sumba. Mr. Elwes notes that he possesses one specimen only, but does not say from what island, while de Nicéville has never seen it.

16. Danais (Ravadeba) philo, Grose Smith.

Ravadebra [sic] *philo*, Grose Smith, Nov. Zool., vol. ii, p. 77 (1895); *Ravadeba philo*, Grose Smith and Kirby, Rhop. Ex., pl. Ravadeba i, figs. 7, 8, *female* (1896).

Sambawa (*Doherty* and *Grose Smith*). There are two pairs of this species in Elwes' collection, and a single female (the type) is in the collection of Hon. Walter Rothschild.

17. Danais (Bahora) philomela, Zinken-Sommer.

Bali (*Doherty*).

18. Danais (Chittira) orientis, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty* and *Fruhstorfer*). Mr. Doherty says that this species appear to belong to Mr. Moore's genus *Badacara*, though he places it in *Chittira*. Mr. Elwes says it is very near to *D.* (*Badacara*) *nilgiriensis*, Moore, but he is unable to follow the minutiæ of Mr. Moore's "genera," so cannot say whether it is a *Chittira* or a *Badacara*. Mr. Fruhstorfer places it in the subgenus *Caduga*. Without seeing a specimen de Nicéville is unable to say to which subgenus it should properly belong.

19. Euploea (Vadebra) elwesiana, de Nicéville.

E. (*Vadebra*) *elwesiana*, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 543, n. 1, pl. i, fig. 4, *male* (1897).

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty* and *Fruhstorfer*). Mr. Fruhstorfer records this species from Lombok and Sambawa as *E.* (*Vadebra*) *sepulchralis*, Butler, and *in litt.* to de Nicéville says that *E. elwesiana* and *E. neptis*, Röber, from Flores, are both synonyms of that species, which was originally described from

Java. We have no specimens of *E. sepulchralis* with which to compare *E. elwesiana*, but as Mr. Butler's description and figure of his species differ from de Nicéville's of *E. elwesiana*, we have kept them distinct.

P. S.—Since the above was written, Mr. Fruhstorfer has recorded *E. sepulchralis* from Lombok and Sambawa.

20. Euplœa (Menama) deheerii, Doherty.

Lombok (*Fruhstorfer*), Sambawa (*Doherty* and *Frushtorfer*). If we have correctly identified the hitherto undescribed female of this species, it differs considerably from the male, the upperside of the forewing being strongly instead of slightly glossed with iridescent violet colour, though this character is rather variable; the submarginal series of spots are very much larger and more numerous, the series being usually complete from the costa to the anal angle, though one specimen has two spots only and another four, these spots being white in the middle, broadly surrounded with pale violet, and there are six marginal white dots in pairs between the veins from the submedian internervular fold to the lower discoidal internervular fold; in some specimens these dots are wanting; on the hindwing the marginal series of dots is usually complete, and the submarginal series consists of from two to eight decreasing spots, while the male has two or three only. The underside presents much the same differences as on the upperside, except that in the forewing the submarginal series of spots form an even curve instead of being highly irregular in position as they are in the male, in the latter sex the spot in the second median interspace is far removed inwardly from the line of the others, and the spot in the first median interspace is also out of line, though less so than the spot anterior to it. The species is a very variable one in both sexes.

21. *Euplœa (Menama) suavissima, Fruhstorfer.

E. (*Menama*) *suavissima*, Fruhstorfer, Berl. Ent. Zeitsch., vol. xlii, p. 122 (1897).

Lombok (*Fruhstorfer*). It is unusual for two species of the same subgenus of *Euplœa* to occur together; perhaps this species is one of the numerous varieties of the last named.

22. *Euplœa (Tronga) sp.

Sambawa? (*Doherty*). Mr. Doherty obtained a species probably of this subgenus in Sambawa, but the specimens were lost before he could identify them.

23. Euplœa (Tronga) crameri, Lucas.

Bali (*Doherty*). These specimens appear to be typical, having the

marginal and submarginal series of dots on the upperside of the forewing very small, almost obsolete. *E. bremeri*, Felder, has them large and conspicuous. In all other respects the two species agree exactly.

24. Euplœa (Penoa) geyeri, Felder.

Lombok (*Fruhstorfer*). A single much torn male has been received by de Nicéville, who has so identified the specimen but with great doubt. It has the sexual brand broad, and thirteen mm. in length ; the double marginal series of white spots on the upperside of the hindwing pure white and prominent ; it is certainly distinct from the two species which follow. It was originally described from Java.

25. *Euplœa (Penoa) pinwilli, Butler.

Lombok (*Fruhstorfer*). This may be the species last named, but de Nicéville's specimen differs greatly from typical *E. pinwilli* from the Malay Peninsula and Sumatra.

26. *Euplœa (Penoa) eyndhovii, Felder.

Lombok and Sambawa (*Fruhstorfer* as *E. eindthoveni*, sic !). We presume Mr. Fruhstorfer refers to this species, though he alters the spelling of its name in four particulars. We would again remark that it is unlikely that three species of the same subgenus are found together in one small island. As far as we are aware, *E. eyndhovii* is confined to Java.

27. *Euplœa (Penoa) sp.

Sambawa (*Doherty*). Mr. Elwes notes that his Bali and Sambawa *Penoas* are *E. eyndhovii*, Felder,=*E. menetriesii*, Felder, the latter name having priority, and differ only from Perak specimens in having the marginal spots on the hindwing shorter and whiter. Mr. de Nicéville has seen no *Penoa* from Bali. Perhaps Elwes' specimens are what de Nicéville has called *E. geyeri*, Felder.

28. *Euplœa (Crastia) atossa, Pagenstecher.

Lombok (*Fruhstorfer*), Sambawa (*Pagenstecher* and *Fruhstorfer*). We are unable to identify this species from the description and figure in Jahr. des Nass. Ver. für Natur., vol. xlix, p. 132, n. 53, pl. iii, fig. 2, *male* (1896) with anything in our collections. Mr. Fruhstorfer transfers it doubtless correctly to the subgenus *Isamia*.

29. *Euplœa (Crastia or Vadebra) palmedo, Doherty.

Sumba (*Doherty* and *Fruhstorfer*). Recorded by Dr. Pagenstecher in his first paper as *E. palmeda* [sic].

30. *Euplœa (Rasuma?) lewa, Doherty.

Sumba (*Doherty* and *Fruhstorfer*).

31. Euplœa (Trepsichrois) claudius, Fabricius.

Bali (*Doherty* and *Fruhstorfer*).

32. Euplœa (Trepsichrois) gelderi, Snellen.

E. gelderi, Snellen, Tijd. voor Ent., vol. xxxiii, p. 98 (1890); vol. xxxiv, p. 232, n. 2, pl. xiv, fig. 1, *male* (1891); *E.* (*Trepsichrois*) *dongo*, Doherty, Journ. A. S. B., vol. lx, pt. 2, p. 160 (1891).

Lombok (*Fruhstorfer*), Sambawa (*Doherty* and *Fruhstorfer*). Originally described from Flores. A very distinct species.

33. *Euplœa (Trepsichrois) elwesii, Doherty.

Sumba (*Doherty* and *Fruhstorfer*).

34. *Euplœa eucala, Staudinger.

E. eucala, Staudinger, Iris, vol. viii, p. 373, pl. vii, fig. 4, *male* (1895).

Sambawa (*Staudinger* and *Fruhstorfer*). Referred to by Dr. Pagenstecher in his second paper as *E. eucalle* [sic]; the reference also is incorrect. Mr. Fruhstorfer also spells the name erroneously.

35. Euplœa gyllenhalii, Lucas.

Bali (*Doherty* and *Fruhstorfer*).

36. Euplœa (Calliplœa) sambavana, Doherty.

Lombok (*Fruhstorfer* as *sumbawana*, sic!), Sambawa (*Doherty* and *Fruhstorfer*). Mr. Elwes notes that the male from Sambawa has the upperside of the forewing of a deeper colour than in *E. mazares*, Moore, but that the markings are similar to those of the latter species from Java and Bali, and that at best *E. sambavana* is only a local race of *E. mazares*.

37. Euplœa (Calliplœa) mazares, Moore.

Bali (*Doherty* and *Fruhstorfer*). Mr. Fruhstorfer quite incorrectly transfers this species to the subgenus *Selinda*.

38. *Euplœa (Calliplœa) sumbana, Doherty.

Sumba (*Doherty* and *Fruhstorfer*).

39. Euplœa (Selinda) eleusina, Cramer.

Bali (*Doherty*), Lombok and Sambawa (*Fruhstorfer*), Sambawa, Sumba—stated by Elwes to be in his collection (*Doherty*).

40. Euplœa (Salpinx) meizon, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty* and *Fruhstorfer*).

41. Euplœa (Salpinx) leucostictos, Gmelin.

Bali (*Doherty*).

42. Euplœa (Isamia) sp.

Sambawa (*Doherty*). Mr. Doherty notes that "An undescribed *Isamia* occurs in Sambawa." Mr. Elwes has three males and one female of this, and notes that it is allied to *E. chloë*, Guérin, but as a separate description is required for each specimen owing to the great variability of the species, he cannot name it on this material. See No. 28 *ante*.

43. Euplœa (Stictoplœa) lacordairei, Moore.

Lombok (*Fruhstorfer* as *lacordairi*, sic!), Sambawa (*Doherty* and *Fruhstorfer*). Recorded from Sumba by Doherty, but he informed de Nicéville that this was a mistake, Sambawa being meant. There is a male from Sambawa in de Nicéville's collection.

44. Euplœa (Stictoplœa) melolo, Doherty.

Sumba (*Doherty* and *Fruhsterfer*). Recorded by Dr. Pagenstecher in both his papers as *E. melelo* [sic]. There is one male in de Nicéville collection.

Subfamily Satyrinæ.

45. Mycalesis (Orsotriæna) medus, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

46. Mycalesis (Calysisme) perseus, Fabricius.

Bali, Sambawa, Sumba (*Doherty*).

47. Mycalesis (Jatana) wayewa, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). The *Mycalesis merops*, Grose Smith, Nov. Zool., vol. ii, p. 80, n. 11 (1895), recorded from Sambawa by Mr. Grose Smith, Sumba by Dr. Pagenstecher, and Lombok by Mr. Fruhstorfer, is almost certainly a synonym of *M. wayewa*. Mr. Grose Smith described *M. merops* from Sambawa, Adonara and Pura.

48. Mycalesis (Martanda) janardana, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

49. Mycalesis (Loesa) oroatis, Hewitson.

Bali (*Doherty*).

50. Lethe (Nemetis) minerva, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

51. Lethe (Debis) manthara, Felder.

Bali (*Doherty*). Mynheer P. C. T. Snellen in Tijd. voor Ent., vol. xxxv, p. 4, n. 4 (1892), says that *Debis manthara*, Felder, is the same as *Debis mekara*, Moore; but this is incorrect, they are abundantly distinct in the female sex, on the upperside the ground-colour of both wings in *D. mekara* is ferruginous, in *D. manthara* it is dull ochreous; *D. mekara* has the discal macular band of the forewing pure white and highly angled, with a duplicated subapical white spot, while *D. manthara* has the discal band inconspicuous, curved (instead of angled), and pale ochreous, with no subapical white spot; while on the hindwing the five submarginal black spots are much larger in *D. manthara* than in *D. mekara*. The males of the two species are very similar, though *D. manthara* is much the paler on the upperside of both wings.

52. Lethe europa, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

53. Lethe dyrta, Felder.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

54. Ypthima leuce, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty describes the sex-mark of the male of this species as "whitish," but it is in this species, as in all the species of *Ypthima* in which it is present, more or less black. This is the species from Flores given by Mynheer P. C. T. Snellen in Tijd. voor Ent., vol. xxxiv, p. 236, n. 12, pl. xv, fig. 1, *female* (1891), as *Y. baldus*, Fabricius.

55. Ypthima horsfieldii, Moore.

Bali (*Doherty*). Originally described from Java.

56. Ypthima philomela, Johanssen.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sumba (*Pagenstecher* as *Y. baldus*, Fabricius). This in the *Y. baldus* of Mr. Elwes' monograph of the genus (Trans. Ent. Soc. Lond., 1893, p. 14, n. 10, pl. i, figs. 15, 16, *clasp* and *œdeagus of the male*). See also the late

Capt. E. Y. Watson's remarks on these species in Journ. Bomb. Nat. Hist. Soc., vol. x, p. 644, n. 40 (1897), with which de Nicéville agrees.

57. *Ypthima huebneri, Kirby.

Sumba (*Pagenstecher*). This record requires confirmation we think, as the species has never before been obtained out of the continent of Asia except in Borneo. Dr. Pagenstecher gives the *Y. philomela* of Hübner from Java as a synonym, a species with six ocelli in pairs, while *Y. huebneri* has only four ocelli, arranged one and three. He also gives the *Y. florensis* of Snellen, from Flores, as another synonym, but this surely is an absolutely distinct species from either of the others, as it has only two very large ocelli on the underside of the hindwing, as figured in Tijd. voor. Ent., vol. xxxiv, p. 235, n. 11, pl. xiv, fig. 3, *male* (1891). Dr. Pagenstecher makes three mistakes in the reference to this species, the page is 235 not 225, the plate is 14 not 4, and the figure is 3 not 3*a*. In de Nicéville's opinion *Y. florensis* is a synonym of *Y. asterope*, Klug.

58. *Ypthima asterope, Klug.

Sumba (*Doherty*).

59. Erites medura, Horsfield.

Bali (*Doherty*).

60. Melanitis ismene, Cramer.

Bali, Lombok, Sambawa, Sumba (*Doherty*). Mr. Doherty and Dr. Pagenstecher record this species under the name of *M. leda*, Linnæus, but according to Dr. A. G. Butler, that species is confined to Amboina (Ent. Month. Mag., vol. xxi, p. 246 (1885). Mr. Fruhstorfer records both *M. ismene* and *M. leda* from Lombok. This is probably a mistake. The species is markedly affected by dry and wet weather, probably Mr. Fruhstorfer keeps distinct the ocellated and non-ocellated forms, which de Nicéville has bred the one from eggs laid by the other.

61. *Melanitis cruentula, Fruhstorfer.

Lombok (*Fruhstorfer*). From the figure of this species in Berl. Ent. Zeitsch., vol. xli, p. 386, pl. ix, fig. 5, *female* (1897), it appears to be quite a distinct species from *M. ismene*. Mr. Fruhstorfer says it is a local race of *M. belinda*, Grose Smith, Nov. Zool., vol. ii, p. 79, n. 10 (1895), from Adonara. It is more than probable in de Nicéville's opinion that Grose Smith's name will stand for the species.

62. *Melanitis constantia, Cramer.

Sambawa, Sumba (*Doherty*).

Subfamily Elymniinæ.

63. Elymnias protogenia, Cramer.

Bali, Sambawa (*Doherty*), Sumba (*Pagenstecher*), Bali (*Fruhstorfer* as *E. protogenia baliensis*, Fruhstorfer). Doherty records this species from Sambawa as *E. undularis*, Drury, and says that no *Elymnias* is known from Sumba (but Dr. Pagenstecher has since recorded it from thence as *E. undularis*) or Timor (but in de Nicéville's collection is an *Elymnias* from Timor received from Dr. Staudinger with the MS. name *E. undularis*, var. *timorensis*). *E. protogenia* was originally described from Java, and differs but slightly from the *E. undularis* of Drury, which has precedence. Mr. H. Fruhstorfer in "Societas Entomologica," 1896, describes the Bali local race as *E. protogenia baliensis*, but it is, as far as our specimens of both sexes show, identical with typical *E. protogenia*. The paper in which this species is described is simply peppered over with misprints. Dr. Staudinger has issued the Sambawa form with the MS. name of *E. sambawana*, which has in the male the outer margin of the hindwing on the upperside of a somewhat deeper ferruginous colour than in typical specimens from Java and Bali, but does not otherwise differ.

64. Elymnias nigrescens, Butler.

Bali, Lombok (*Doherty*), Lombok (*Fruhstorfer* as *E. nigrescens meliophila* and *melitophila*). The male is barely distinguishable from the same sex of *E. protogenia*, Cramer, the female is of course abundantly distinct from the same sex of that species. Even as a local race we do not think that *E. meliophila* can stand. Our single female from Lombok is brown on the upperside of the forewing with little or none of the purple gloss shown in females from Perak. This brown form occurs also in Sumatra with the more common purple form.

65. Elymnias dara, Distant.

Bali (*Doherty*). *E. dara* was described from Borneo, *E. albofasciata*, Staudinger, from Palawan in the Philippines. The former name has priority. Mr. Moore in Lep. Indica, vol. ii, p. 156, keeps them distinct, but it is doubtful if specimens from the typical localities have ever been compared together. They are probably one and the same species.

66. Elymnias (Melynias) prætextata, Fruhstorfer.

Bali (*Doherty*), Lombok (*Fruhstorfer*). Recently described in

"Societas Entomologica" by Mr. H. Fruhstorfer from Lombok as *E. casiphone prætextata*.

67. *Elymnias (Melynias) kamara, Moore.

Lombok (*Fruhstorfer*). Originally described from Java. The species which follows differs from it only in having on the upperside of the hindwing a single series of narrow ochreous-white spots instead of a second and third series anterior to the first extending towards the base of the wing.

68. Elymnias (Melynias) exclusa, de Nicéville, n. sp.

Habitat: Bali, 2,000 to 4,000 feet, March, 1896 (*Doherty*).

Expanse: ♂, 3·0 inches.

Description: Male. Differs from the same sex of *E. casiphone prætextata*, Fruhstorfer, from the low country of Bali and from Lombok, in having the upperside of the *forewing* entirely deep uniform velvety black, without markings, in that species the ground-colour is fuscous becoming outwardly much paler, with a submarginal series of six bluish-white spots. *Hindwing* differs also in having the ground-colour much darker, with a submarginal series of four prominent elongated ochreous-white spots placed between the veins, these being obsolete in that species; it is heavily clothed on the disc with long black hairs. Underside, *both wings* much as in that species. Differs from *E. erinyes*, de Nicéville, from the Battak mountains of North-East Sumatra, in the forewing being shorter, less elongated, and on the upperside of the hindwing in not having a series of elongated pale streaks between the veins. Female unknown.

Mr. de Nicéville will figure this species in a later paper. In de Nicéville and Elwes' collections are single males.

Subfamily Amathusiinæ.

69. Amathusia phidippus, Johanssen.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*).

70. Discophora celinde, Stoll.

Bali (*Doherty*).

71. *Discophora timora, Doubleday and Hewitson.

Lombok (*Fruhstorfer*). Messrs. Doherty and Fruhstorfer credit this species erroneously to Wallace.

72. Discophora sondaica, Boisduval.

Bali (*Doherty*).

73. Zeuxidia luxerii, Hübner.

Bali (*Doherty*).

74. Clerome arcesilaus, Fabricius.

Bali (*Doherty*).

Subfamily Acræinæ.

75. *Acræa andromacha, Fabricius.

Sumba (*Pagenstecher*).

76. Pareba vesta, Fabricius.

Bali (*Doherty*).

Subfamily Nymphalinæ.

77. Ergolis ariadne, Linnæus.

Bali, Lombok (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

78. *Ergolis merione, Cramer.

Mr. Doherty writes: "I believe *E. merione* also occurs in Sambawa."

79. Euripus halitherses, Doubleday and Hewitson.

Bali (*Doherty*). The female is of the form "*Diadema*" *nyctelius*, Doubleday (=*E. cinnamomeus*, Wood-Mason), the upperside having the forewing purplish, and the hindwing brown.

80. Cupha erymanthis, Drury.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

81. Atella phalantha, Drury.

Bali, Lombok, Sambawa, Sumba (*Doherty*), Lombok (*Fruhstorfer*).

82. *Atella sinha, Kollar.

Sambawa, Sumba (*Doherty*). Dr. Pagenstecher in his second paper records this species from Sumba as *A. egista*, Cramer. That species is entirely different from *A. sinha*; de Nicéville has it from the Ké Islands

and Cairns in Northern Australia. *A. propinqua*, Miskin, described from Australia, is a synonym of *A. egista*.

83. Cethosia penthesilea, Cramer.

C. penthesilea exsanguis, Fruhstorfer, Berl. Ent. Zeitsch., vol. xli, p. 382 (1897).

Bali, Sambawa, Sumba (*Doherty*), Lombok (*Fruhstorfer*). Mr. de Nicéville has this from Bali, Lombok and Sumba only. A single male of *A. penthesilea exsanguis*, Fruhstorfer, received from Mr. Fruhstorfer and taken by him at Ekas, Lombok, in May, 1896, is practically inseparable from two male specimens from Sumba, also received from the same gentleman, and the typical form from Java. Cramer's figure appears to be slightly exagerated, the white subapical band on the upperside of the forewing being rather wider than in any Javan specimens in our collections.

84. Cethosia narmada, Fruhstorfer.

Cetosia [sic] *narmada*, Fruhstorfer, Berl. Ent. Zeitsch., vol. xli, p. 380, pl. ix, fig. 2, *male* (1897).

Lombok, Sambawa (*Fruhstorfer*).

85. Cethosia narmadoides, de Nicéville, n. sp.

Habitat: Bali (*Doherty*).

Expanse: ♂, 2·9 and 3·2 inches.

Description: Male. Upperside, *both wings* differ from the same sex of *C. narmada*, Fruhstorfer, from Lombok, in having the outer marginal black areas much narrower, thus leaving the discal and basal red areas much larger, occupying the whole of the discoidal cell in the forewing instead of the posterior half only; and in the hindwing leaving quite free the outer discal series of round black spots, instead of extending right up to and more or less including them. *Forewing* has the subapical oblique series of markings reddish-ochreous instead of whitish, much larger and more numerous than in *C. narmada*, in the latter the anterior of the three subapical spots is widely separated from the two posterior ones. Underside, *both wings* have the ground-colour much paler, in *C. narmada* it is heavily suffused with black; the discal pale ochreous band is much broader in the present species. Female unknown.

The figure of *C. narmada* does not agree with the specimens of that species in de Nicéville's collection received from and named by Fruhstorfer. Instead of having on the upperside of the forewing three subapical spots only, there is a nearly complete series as in *C. narmadoides*;

and on the hindwing the outer discal series of black spots is free of the marginal black band, thereby agreeing with *C. narmadoides*, instead of being absorbed in the band. Mr. de Nicéville will figure the species in a later paper. It is described from two male specimens taken by Mr. W. Doherty in the low country of Bali in April, 1896. Mr. Fruhstorfer writes to de Nicéville that he has "Just received from Sambawa a typical *C. narmada*, and that it is found in that island with *C. tambora*, Doherty, while Lombok has only one species. *C. cyane*, var. *sambawa*, Pagenstecher, from Sumba, is very distinct on both surfaces from either of the above-named species. I have it also from Kalao, the small island near Tanah-Djampea between Celebes and Flores. *C. sambana* has on the upperside of the forewing a very large subapical band instead of a small one as in *C. tambora* and a narrow one in *C. narmada*, and has on the underside of the hindwing a submarginal orange-yellow band instead of a black one in *C. tambora* and a brownish one in *C. narmada*." In the absence of specimens or good coloured figures of all these species, it is exceedingly difficult to identify them.

86. Cethosia tambora, Doherty.

Sambawa, and doubtfully from Sumba (*Doherty*). In Dr. Pagenstecher's first paper he records this species and gives a very full description of it as *C. cyane*, Drury, var. *sumbana*, from Sumba. In his second paper, p. 137, n. 62, he records it from Sumba and Sambawa correctly as *C. tambora*, and figures a female (not a male, as stated by him), the sex described by Doherty. Males of *C. tambora* from Sambawa in our collections differ from this figure in having the subapical ochreous band on the upperside of the forewing narrower, and the marginal black band on the upperside of the hindwing also much narrower. *C. tambora* is a very distinct species, the blue-black and ochreous-white coloration of the underside being quite remarkable. We have seen no specimens from Sumba. Should that local race be distinct, Dr. Pagenstecher's name *C. sumbana* can be applied to it. See No. 85 *ante*.

87. *Cynthia dejone, Erichson.

Sambawa, Sumba (*Doherty* as *C. deione*, sic!). This is probably a wrong identification, as far as we know *C. dejone* is confined to the Philippine Isles. Mr. Doherty has the following note regarding this species: "A single male, Sumba, interior. Common in Sambawa, where the females vary to a remarkable extent, some being as red as the male, while others are dark green insects like *Parthenos*. Intermediate forms are common." Dr. Pagenstecher in his second paper records the species as *C. arsinoë*, Cramer, which is quite a distinct species from the Moluccas and New Guinea. See the next species, No. 88.

88. Cynthia austrosundana, Fruhstorfer.

Lombok, West Sambawa, Sumba (*Fruhstorfer*). We have a pair of this species from Lombok, three males from Sambawa, and two males from Sumba; it seems to be a very distinct species. Mr. Fruhstorfer describes it in "Societas Entomologica," No. 7, for July, 1897, as a subspecies of *C. erota*, Fabricius. In the Berl. Ent. Zeitsch., vol. xlii, p. 4 (1897), Mr. Fruhstorfer changes the name to *C. austrosunda*!

89. *Helcyra chionippe, Felder.

Sumba (*Doherty*).

90. Apatura (Rohana) nakula, Moore.

Bali (*Doherty*). One female only obtained. As far as we are aware, this is only the second specimen known of this sex, the type of the species, also a female, from Java, is unique in the British Museum, and has been figured by de Nicéville in Journ. Bomb. Nat. Hist. Soc., vol. ix, pl. N, fig. 6, *female* (1895).

91. Herona pringondani, Fruhstorfer.

Bali (*Doherty*). This species has been figured by de Nicéville from Java in Journ. A. S. B., vol. lxiii, pt. 2, p. 4, n. 3, pl. iii, figs. 5, *male*; 4, *female* (1894). Bali specimens are quite the same.

92. Precis ida, Cramer.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

93. Precis iphita, Cramer.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

94. *Junonia atlites, Johanssen.

Lombok (*Fruhstorfer* as *J. laomedia*), Sambawa, Sumba (*Doherty*). Recorded by Dr. Pagenstecher in his first paper as *J. laomedia*, Linnæus.

95. Junonia almana, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). As *J. almana* and *J. asterie*, Linnæus, are unquestionably one and the same species, the former being the dry-season, the latter the wet-season form, and the former name having priority, it must be used for the species, though the wet-season form probably alone occurs in the above-named islands. The Sambawa and Sumba form has been named by Doherty

J. asterie, var. *sumbæ*. It differs but slightly from the typical form. The Bali specimens also are var. *sumbæ*, as are probably also the Lombok ones, which we have not seen.

96. *Junonia villida, Fabricius.

Sumba (*Doherty*). Originally described from Australia, and in de Nicéville's collection from thence, and from the Ké Isles, German New Guinea and the Solomon Isles. Mr. Doherty spells the name "*vellida*" incorrectly.

97. Junonia erigone, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Messrs. Doherty and Fruhstorfer record this species under the older name *J. aonis*, Linnæus, the former remarking that "The species is certainly very close to the Javanese *J. erigone*." As, however, *J. aonis* cannot be identified with certainly, though it is probably an older name for the Indian and Chinese *J. lemonias*, Linnæus (*confer* Aurivillius, p. 169), we have thought it better to follow Dr. Pagenstecher in his second paper in identifying the species under Cramer's name. We have specimens of *J. erigone* from Java, Bali, Kalao, and Sumba which are indistinguishable.

98. Junonia timorensis, Wallace.

Sumba (*Doherty*). Mr. de Nicéville possesses a single male from Sumba given to him by Mr. Doherty.

99. *Junonia ocyale, Hübner.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty records this species as *J. orithyia*, Linnæus, but the form occurring in the above-named islands is more likely to be Hübner's local race than the typical form from China. Dr. Pagenstecher also records it as *J.* "*orithya*" and *orithyia* from Sumba in both his papers.

100. Neptis (*Rahinda*) hordonia, Stoll.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

101. Neptis batara, Moore.

Bali (*Doherty*).

102. Neptis vikasi, Horsfield.

Bali (*Doherty*).

103. Neptis leucothoë, Cramer.

Bali, Lombok, Sambawa (*Doherty*), Lombok (*Fruhstorfer*).

104. Neptis sumba, Doherty.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). We have one male from Sambawa and both sexes from Lombok which we identify with this species, described by Doherty as *N. nandina* [=*soma*], var. *sumba*. He says that a somewhat different form from the typical Sumba one occurs in Sambawa.

105. Neptis susruta, Moore.

Bali (*Doherty*). Bali specimens agree absolutely with Sumatran specimens.

106. *Neptis aceris, Lepechin.

Bali (*Fruhstorfer*), Sumba (*Pagenstecher*). Mr. Fruhstorfer credits this species to Esper. It is probable that our *N. susruta*, Moore, is the same species as Fruhstorfer's *N. aceris*. The latter is usually held to be restricted to Europe, Central and Northern Asia and Japan. Dr. Pagenstecher's specimens also are probably *N. susruta*.

107. Neptis (Phædyma) columella, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). It is a little remarkable we think that no species of *Cirrhochroa* appears to occur in any of the islands treated in this paper, as at least four species are found in Java.

108. *Hypolimnas misippus, Linnæus.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

109. Hypolimnas bolina, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

110. *Hypolimnas saundersi, Wallace.

Sumba? (*Doherty*). It was originally described from Timor.

111. Hypolimnas anomala, Wallace.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa? (*Doherty*).

112. Lebadea martha, Fabricius.

Bali (*Doherty*).

113. Limenitis procris, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Elwes notes that the Bali form differs in having smaller apical spots to the forewing, and a shorter band to the hindwing; the ground-colour of both wings being rather darker; but a Sambawa specimen is intermediate. Mr. H. Fruhstorfer in Ent. Nach., vol. xxiii, p. 59 (1897), has recently described *L. procris neutra* from Java and Lombok. Mr. de Nicéville has only seen specimens from Java, and these are inseparable from the typical form which was described from China. Mr. Fruhstorfer calls the form from Malacca, Sumatra and Borneo *L. procris agnata*. See also his remarks on both these local races in Berl. Ent. Zeitsch., vol. xli, p. 311 (1896).

114. Limenitis hollandii, Doherty.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

115. *Athyma perius, Linnæus.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

116. *Athyma sp.

Lombok (*Fruhstorfer*). Mr. Fruhstorfer records a new species of *Athyma* near *A. amhara*, Druce, from Lombok.

117. *Athyma karita, Doherty.

Sumba (*Doherty*). Mr. Doherty says that this "Species seems intermediate between *A. venilia* and *A. amhara*." But the former species is a *Neptis* and not an *Athyma*, and was described by Linnæus.

118. Athyma nefte, Cramer.

Bali, Sambawa (*Doherty*). This is probably the species recorded from Sambawa by Dr. Pagenstecher in his second paper as *A. selenophora*, Kollar.

119. *Euthalia (Adolias) æglē, Doherty.

Sumba (*Doherty*).

120. Euthalia (Tanaëcia) stygiana, Fruhstorfer.

Bali (*Doherty, Fruhstorfer*), Lombok (*Fruhstorfer*). This species has been recently described by Mr. Fruhstorfer in Berl. Ent. Zeitsch., vol. xli, p. 385 (1897), from Lombok. It is very near to *E. pelea*, Fabricius, from Java, of which "*Adolias*" *palguna* of Moore, also described from Java, is a synonym, but may be known by the ground-colour of both

sides of both wings in both sexes being darker, and the discal white band of the forewing on both sides in both sexes being anteriorly more completely divided into two portions by a broader band of the ground-colour.

121. Euthalia (Tanaëcia) singoradja, Fruhstorfer.

Bali (*Doherty*), Singoradja Island near Lombok (*Fruhstorfer*). If we have correctly identified this species, it bears the same relation to *E. trigerta*, Moore, from Java, as *E. stygiana*, Fruhstorfer, does to *E. pelea*, Fabricius. A description of it will be found in Berl. Ent. Zeitsch., vol. xli, p. 385 (1897). The ground-colour of both wings on both surfaces is much darker than in *E. trigerta*, and there are some differences also in the details of the markings, especially on the underside.

122. *Euthalia (Nora) obsoleta, Fruhstorfer.

E. obsoleta, Fruhstorfer, Berl. Ent. Zeitsch., vol. xli, p. 383, pl. ix, fig. 3, *male* (1897).

Lombok (*Fruhstorfer*). Only two specimens obtained by Mr. Fruhstorfer, one he has kept, the other is now in the collection of the Hon. Walter Rothschild.

123. Euthalia nivepicta, Fruhstorfer.

Lombok (*Doherty* and *Fruhstorfer*). Described by Mr. Fruhstorfer in Berl. Ent. Zeitsch., vol. xli, p. 384 (1897), from Lombok. Our single female from that island has the discal whitish band on the upperside of both wings more strongly developed than in typical *E. aconthea*, Cramer, from Java; otherwise all the markings are similar in both species.

124. Euthalia sp.

Sumba? (*Doherty*). Mr. Doherty notes "An *Euthalia*, dark like *E. garuda*, Moore, seems also to inhabit Sumba, but none were taken."

125. Euthalia anosia, Moore.

Bali (*Doherty*).

126. *Euthalia adonia, Cramer.

Lombok (*Fruhstorfer*).

127. *Pyrameis cardui, Linnæus.

Sumba (*Doherty*).

128. *Pyrameis dejeanii, Godart.

Lombok (*Fruhstorfer*).

129. Symbrenthia hippoclus, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). The white form of the female is found in Lombok, it is not known if the yellow form also occurs in that island, or what form or forms occur in Bali; both forms fly together in Java.

130. Symbrenthia hypselis, Godart.

Bali (*Doherty*). Agrees exactly with Javan specimens.

131. Rhinopalpa elpinice, Felder.

Bali (*Doherty*).

132. Yoma sabina, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

133. Cyrestis nivea, Zinken-Sommer.

Bali, Sambawa (*Doherty*).

134. Cyrestis nais, Wallace.

Lombok (*Fruhstorfer*), Sambawa (*ex Staudinger*), Sumba (*Doherty*).

135. Cyrestis fruhstorferi, Röber.

C. fruhstorferi, Röber, Ent. Nach., vol. xxii, p. 305 (1896).

Lombok (*Fruhstorfer*).

136. Cyrestis lutea, Zinken-Sommer.

Bali (*Doherty*).

137. Cyrestis periander, Fabricius.

Bali, Sambawa (*Doherty*).

138. Cyrestis (Chersonesia) rahria, Moore.

Bali (*Doherty*).

139. Cyrestis (Chersonesia) peraka, Distant.

Bali (*Doherty*).

140. Doleschallia bisaltide, Cramer.

Bali, Lombok, Sumba ? (*Doherty*), Lombok (*Fruhstorfer*). In de Nicéville's collection there are two females of this species (= *D. pratipa*,

Felder) from Lombok. It has the ground-colour of the upperside of both wings much paler than in *D. polibete*, Cramer, the ochreous areas in the forewing are larger, consequently the black band at the end of the discoidal cell is narrower, with only one subapical white dot.

141. Doleschallia polibete, Cramer.

Lombok (*Fruhstorfer*). In de Nicéville's collection there is a single female of this species. It has the ground-colour of the upperside of both wings much deeper ferruginous than in *D. bisaltide*, Cramer, the black band at the end of the discoidal cell of the forewing broader, the tawny band beyond narrower, with four subapical white dots; the wing is also much more falcate, and the apex more produced than in *D. bisaltide*. The hindwing is very deep ferruginous (castaneous) coloured instead of fulvous. We possess no males of either species from Lombok.

142. *Charaxes (Eulepis) athamas, Drury.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Fruhstorfer records *C. phrixus*, Röber, from Lombok, a species considered by Dr. A. G. Butler to be a synonym of *C. athamas* (Journ. Linn. Soc. Lond., Zoology, vol. xxv, p. 383, n. 92 (1896).

143. *Charaxes (Eulepis) batavianus, Fruhstorfer.

Lombok (*Fruhstorfer*). Mr. Fruhstorfer writes to de Nicéville that he intends shortly to describe this local race of *C. athamas*, Drury, in Ent. Nach., vol. xxiv (1898), from West Java and Lombok.

144. *Charaxes (Eulepis) alphius, Staudinger.

Lombok (*Fruhstorfer*), Sambawa (*Butler*). Mr. Fruhstorfer records this species from Lombok as *C. athamas alphius*. Dr. Butler gives it full specific rank.

145. *Charaxes (Eulepis) fallax, Röber.

Lombok (*Fruhstorfer*). Mr. Fruhstorfer records this species from Lombok as *C. attalus*, Felder, and places *C. fallax*, Röber, as a synonym of it. Dr. Butler gives *C. fallax* full specific rank (l. c., p. 385, n. 95), and places *C. attalus*, Felder, as var. 5 of *C. athamas*, Drury. Mr. Fruhstorfer writes to de Nicéville that he intends to describe in Ent. Nach., vol. xxiv (1898) the species he records as *C. attalus* as *C. attalus lombokianus*, that he has seen the type of *C. attalus*, and that *C. fallax* is a synonym of it.

146. Charaxes (Eulepis) moori, Distant.

Bali (*Doherty*), Sumba (*Pagenstecher*). Dr. Pagenstecher spells this name "*moorei*" incorrectly in both his papers, as also does Dr. Butler (l. c., p. 385, n. 96).

147. Charaxes (Eulepis) hebe, Butler.

Bali (*Doherty*).

148. *Charaxes (Murwareda) eudamippus, Doubleday.

Sambawa ? Sumba ? (*Doherty*). Mr. Doherty says he saw a very large *Charaxes* in the above-named islands apparently of the *eudamippus* group.

149. *Charaxes (Murwareda) jovis, Staudinger.

C. jovis, Staudinger, Iris, vol. vii, p. 357 (1895); id., Pagenstecher, Jahr. des Nass. Ver. für Natur., vol. xlix, p. 144, n. 85, pl. ii, fig. 6, *male* (1896).

Sambawa (*Staudinger*), Sambawa, Sumba (*Pagenstecher*). This is probably the species Mr. Doherty saw in Sumba but failed to capture, which he says was something like *C. pyrrhus*, Linnæus, from Amboina.

150. *Charaxes (———) ocellatus, Fruhstorfer.

C. ocellatus, Fruhstorfer, Berl. Ent. Zeitsch., vol. xli, p. 388, pl. ix, fig. 4, *female* (1897).

Lombok (*Fruhstorfer*). This species is said to be allied to *C. orilus*, Butler, from Timor, the male of which is figured, and differs very greatly from the female of *C. ocellatus* figured by Mr. Fruhstorfer.

151. Charaxes (Haridra) baya, Moore.

Bali (*Doherty*).

152. Prothoe franckii, Godart.

Bali (*Doherty*).

Family LEMONIIDÆ.

Subfamily Libythæinæ.

153. *Libythea geoffroyi, Godart.

Lombok (*Fruhstorfer*), Sumba (*Doherty*).

154. *Libythea narina, Godart.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

155. Libythea myrrha, Godart.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

Subfamily Nemeobiinæ.

156. Zemeros flegyas, Cramer.

Bali (*Doherty*). Mr. Doherty spells this name "*phlegyas*," which is classically more correct.

157. Zemeros retiarius, Grose Smith.

Z. retiarius, Grose Smith, Nov. Zool., vol. ii, p. 505, n. 13 (1895); *Z. strigatus* Pagenstecher, Jahr. des Nass. Ver. für Natur., vol. xlix, p. 149, n. 88, pl. iii, fig. 5, *male* (1896).

Lombok (*Fruhstorfer*), Sambawa (*Grose Smith* and *Doherty*), Sumba (*Pagenstecher*). Mr. Doherty recorded this species from Sambawa as *Z. phlegyas*, but it was the present species he obtained, *Z. retiarius* at that date (1891) not having been described.

158. Abisara echerius, Stoll.

Bali (*Doherty*).

Family LYCÆNIDÆ.

159. Gerydus symethus, Cramer.

Bali, Lombok (*Doherty*), Lombok (*Fruhstorfer*). Mr. Elwes notes that a male from Lombok has less white coloration on the upperside of both wings than a male from Bali, which latter has less white again than in specimens from Java. The females from all three islands are similar.

160. *Gerydus teos, Doherty.

Sambawa, Sumba (*Doherty*).

161. Gerydus boisduvali, Moore.

Lombok (*Fruhstorfer*).

162. Gerydus acragas, Doherty.

Bali, Sambawa, Sumba (*Doherty* as a var. of *G. boisduvali*, Moore). Mr. Elwes notes that he has carefully considered Doherty's remarks on this subspecies, and he would ignore the var. *acragas*. He has both sexes of *G. boisduvali* from Perak, Java, Bali, Pulo Laut and Sambawa, all of which are the same. He believes that *G. irroratus*, Druce, and *G. irroratus*, var. *assamensis*, Doherty, are synonyms. Mr. H. H. Druce says that *G. irroratus* is inseparable from *G. boisduvali*, Moore.

163. Parageridus horsfieldi, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*). Mr. Elwes notes that two pairs of this species in his collection from Bali agree better with Mr. H. H. Druce's figures of *P. moorei* (Proc. Zool. Soc. Lond., 1895, p. 562, pl. xxxi, figs. 5, *male*; 6, *female*), from Kina Balu mountain in North Borneo, than with any of his (Elwes') Malayan *P. horsfieldi*, but as the type of this is probably the Javan form, and one in his collection from Java is *P. moorei* rather than *P. horsfieldi*, it seems to him that if they are distinct, which he doubts, it is the peninsular form and not the island one which wants a new name.

Mr. Elwes wishes this note to remain as written, but de Nicéville would point out that Mr. H. H. Druce says that *P. horsfieldi* occurs in Malacca, Sumatra, Java and Borneo, that the underside of *P. moorei* is "pure white," which is not the case in *P. horsfieldi*, and that specimens from Bali in de Nicéville's collection are *P. horsfieldi* and not *P. moorei*.

164. Logania sp.

Sambawa (*Doherty*). The specimens received, so Mr. Elwes notes, are not quite the same as *L. marmorata*, Moore, *L. sriwa*, Distant, *L. massalia*, Doherty, or *L. lahomius*, Kheil, but he thinks it is impossible to decide what it is without a thorough study of the whole group, and the genitalia compared. Mr. de Nicéville has not seen these specimens from Sambawa.

165. Zarona jasoda, de Nicéville.

Bali (*Doherty*). One pair only received. Mr. Elwes notes that they agree on the underside with Burmese specimens, the male, however, is rather green than blue on the upperside. The female is so like the figure of *Z. zanella*, de Nicéville, that whether these are the same species or not, he has now but little doubt that *Z. zanella* is the female of *Z. jasoda*.

166. Pithecops hylax, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

167. Neopithecops zalmora, Butler.

Bali, Sambawa, Sumba (*Doherty*).

168. Spalgis epius, Westwood.

Bali, Sambawa, Sumba (*Doherty*).

169. Megisba malaya, Horsfield.

Bali, Sambawa, Sumba (*Doherty*). The tailed form only obtained

by us. Doherty does not say anything regarding the tails of the specimens he captured.

170. Chilades trochilus, Freyer.

Bali, Sambawa, Sumba (*Doherty*).

171. Cyaniris akasa, Horsfield.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

172. Cyaniris puspa, Horsfield.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

173. Cyaniris musina, Snellen.

Lombok (*Fruhstorfer*). Identical with Sumatran specimens.

174. Cyaniris huegelii, Moore.

Lombok (*Fruhstorfer*). Identical with specimens from Java.

175. Cyaniris placida, de Nicéville.

Lombok (*Fruhstorfer*). This species is found also in Java and Sumatra.

176. *Zizera gaika, Trimen.

Sambawa, Sumba (*Doherty*). Mr. Doherty records this species under its synonym, *Z. pygmæa*, Snellen.

177. Zizera otis, Fabricius.

Bali, Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty records this species under its synonym, *Z. lysizone*, Snellen.

178. *Zizera lysimon, Hübner.

Sumba? (*Doherty*). Mr. Doherty records a third species of the genus from Sumba, which can only be this we believe.

179. Lycænesthes lycænina, Felder.

Lombok (*Fruhstorfer*).

180. *Niphanda tessellata, Moore.

Bali (*Fruhstorfer*). Mr. Fruhstorfer spells the name "*tesselata*."

181. Everes argiades, Pallas.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty records this species under its synonym, *E. parrhasius*, Fabricius.

182. Nacaduba macrophthalma, Felder.

Bali, Sambawa, Sumba (*Doherty*).

183. Nacaduba hermus, Felder.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

184. Nacaduba laura, Doherty.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*), Sambawa (*Fruhstorfer*), Sumba (*Doherty*). Mr. Fruhstorfer found this species very commonly in Lombok. The female type specimen from Sumba is in de Nicéville's collection. The references to the figure given by Doherty in the text of his paper, p. 182, n. 79 and p. 197 are incorrect, the figure is n. 11, not 9, as stated by him.

185. *Nacaduba subperusia, Snellen.

Lycæna subperusia, Snellen, Tijd. voor Ent., vol. xxxix, p. 93, n. 2 (1896).

Sambawa (*Snellen*). Mynheer P. C. T. Snellen has described this species in Dutch from Java and Sambawa. We are unable to recognise it, not knowing that language, and it has not been figured. As he compares it with *Nacaduba perusia*, Felder, from Amboina (*Felder*), Amboina, Celebes and Java (*Snellen*), we have placed it in that genus. *N. perusia* is very close to *N. laura*, Doherty, the figure of the male of the former almost entirely agrees with our specimens of the male of the latter. Mr. de Nicéville thinks it probable that *L. subperusia* is the same species as *N. laura*, Doherty, which certainly occurs in Sambawa.

186. Nacaduba noreia, Felder.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). We have both the tailed and tailless forms from Bali, the Lombok form is tailed, both forms are found in Sambawa, and we have no specimens from Sumba, so cannot say whether the form occurring in that island is tailed or tailless or both. Mr. Doherty records it under its synonym, *N. ardates*, Moore, without remark.

187. Nacaduba atrata, Horsfield.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

188. *Nacaduba dana, de Nicéville.

Sambawa, Sumba (*Doherty*).

189. Nacaduba ancyra, Felder.

Lombok (*Fruhstorfer*), Sumba (*Doherty*). Described by Doherty as

a new species from S.-E. Borneo, Java and Engano as *N. pseustis*, and from Sumba as *N. gaura*. Other synonyms are *N. aberrans*, Elwes, *Plebeius subfestivus*, Röber, *Cupido almora*, Druce, *N. amaura*, H. H. Druce, and *N. maniana*, H. H. Druce. The species has an immense range, from the Malay Peninsula to Australia and the Western Pacific. It is apparently nowhere common, and but few specimens exist in collections, which is probably the reason why various authors having obtained a single example or so from a new locality have jumped to the conclusion that it is a new species, and described and named it at once.

190. Jamides bochus, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). From Mr. Doherty's notes it would appear that the Sumba form is distinct from the Sambawa one.

191. *Jamides nicobaricus, Wood-Mason and de Nicéville.

Lombok (*Fruhstorfer*). It is a most unusual thing for two species of *Jamides* to occur on one island, and we think that Mr. Fruhstorfer's identification of the present species must be incorrect.

192. Lampides aratus, Cramer.

Sumba (*Doherty* and *Pagenstecher*). Mr. Doherty described and figured this species as *L. masu*, the type, a male, being in de Nicéville's collection. Mr. Doherty's references to the figure of this species are incorrect in the text of his paper, p. 184, n. 86, and p. 197, the figure is n. 9, not 11 as stated. In his description Mr. Doherty does not say from whence his specimens came, but the type male ticketed by Doherty is from Sumba. He has written on the ticket "Probably=*L. aratus*, Cramer." The type female is probably lost. Other synonyms are *Plebeius lucianus*, Röber, *Lampides cærulina*, Mathew, and *Lampides ætherialis*, Butler.

193. Lampides margarita, Martin.

Lombok (*Fruhstorfer*), Sambawa (*Doherty*). The Lombok female and the Sambawa specimens (one pair) agree almost absolutely with typical Sumatran ones (two pairs) in de Nicéville's collection.

194. Lampides celeno, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty spells this name "*celæno*."

195. Lampides elpis, Godart.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

196. *Lampides anops, Doherty.

Sumba (*Doherty*).

197. *Lampides schatzi, Röber.

Sambawa (*Pagenstecher*). Dr. Pagenstecher's reference to the plate on which this species is figured is incorrect, it should be pl. iv, not pl. x. It was originally described from Batjan. Herr Röber has sent de Nicéville a female example from Goram.

198. *Lampides cleodus, Felder.

Sumba (*Pagenstecher*).

199. *Lampides saperti, Fruhstorfer.

Lombok (*Fruhstorfer*). The description of this species has not reached us.

200. *Lampides patinka, Fruhstorfer.

Lombok (*Fruhstorfer*). We have seen no description of this species.

201. Catochrysops strabo, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

202. Catochrysops cnejus, Fabricius.

Lombok (*Fruhstorfer*), Sumba (*Doherty*). Mr. Doherty spells this name "*cneius*."

203. Catochrysops pandava, Horsfield.

Bali, Sumba (*Doherty*).

204. *Tarucus theophrastus, Fabricius.

Sumba (*Doherty*).

205. Tarucus telicanus, Lang.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). "*Papilio*" *telicanus* was described in 1789, "*Hesperia*" *plinius*, Fabricius, which is the same species, in 1793, so the former name has four years' priority. "*Lampides*" *cassioides* and *pseudocassius*, Murray, is usually considered by Australian entomologists to be a distinct species, but it is another synonym. The butterfly has a very wide range, occurring in Central and Southern Europe, almost throughout Africa, Southern Asia, Formosa, Australia, and the Pacific Islands. Mr. Roland Trimen, F. R. S., agrees with de Nicéville in considering *T. telicanus* and *T. plinius* to be synonymous.

206. Castalius rosimon, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

207. Castalius ethion, Doubleday and Hewitson.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

208. Castalius roxus, Godart.

Bali, Sambawa, Sumba (*Doherty*).

209. Polyommatus bœticus, Linnæus.

Bali, Lombok, Sambawa, Sumba (*Doherty*), Bali, Lombok (*Fruhstorfer*). Mr. Doherty spells this name "*bæticus*."

210. *Amblypodia narada, Horsfield.

Sumba (*Pagenstecher*).

211. *Iraota timoleon, Stoll.

Sambawa (*Doherty*).

212. *Surendra quercetorum, Moore.

Sambawa (*Doherty*).

213. Surendra vivarna, Horsfield.

Bali (*Doherty*).

214. *Arrhopala araxes, Felder.

Sumba (*Doherty*). Dr. Pagenstecher in his second paper records the species under *A. amantes*, Hewitson. We must await Mr. Bethune-Baker's monograph of this and allied genera before arriving at a final identification of the Sumba form.

215. Arrhopala amantes, Hewitson.

Bali (*Doherty*). Mr. Elwes notes that the blue coloration on the upperside of the hindwing extends more nearly to the outer margin than in typical Indian specimens, thereby reducing the width of the outer black border.

216. *Arrhopala pseudocentaurus, Doubleday.

Lombok (*Fruhstorfer*).

217. Arrhopala apidanus, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). Mr. Doherty records this species as a "var." from Sambawa, and gives

Hewitson the credit of describing it. Doherty's genus *Flos* cannot stand. Mr. G. T. Bethune-Baker informs us that the only species of the genus *Arrhopala* he possesses from these Islands is the ordinary form of *A. apidanus* from Sambawa.

Mr. Fruhstorfer records two unnamed species of *Arrhopala*, and a third unnamed species under the synonymic genus *Narathura*, all from Lombok.

218. Curetis thetis, Drury.

Bali, Sambawa, Sumba (*Doherty*). Mr. Doherty describes the species from Sambawa and Sumba as *C. malayica*, Felder, var. *kiritana*, Doherty. Females from Bali are fulvous and black on the upperside, the white and black females appear to be confined to India, though fulvous females are also found occasionally on the continent; fulvous females alone are found in the Malayan Archipelago.

219. *Curetis insularis, Horsfield.

Lombok (*Fruhstorfer*).

220. Ilerda epicles, Godart.

Bali (*Doherty*). Both sexes agree with the typical form from Java, and are quite distinct from the Sumatran form, *I. ila*, de Nicéville, and the Indian and Western China form, which may perhaps stand as *I. phœnicoparyphus*, Holland, described from Hainan Island, though that species cannot be identified under that name from the description and rough figure alone, and we have seen no Hainan specimens. The type is probably a female, not a male as stated.

221. Aphnæus lohita, Horsfield.

Bali (*Doherty*).

222. Tajuria travana, Hewitson.

Bali, Sambawa (*Doherty*).

223. *Tajuria longinus, Fabricius.

Lombok (*Fruhstorfer*).

224. *Tajuria discalis, Fruhstorfer.

Lombok (*Fruhstorfer*). Mr. Fruhstorfer in describing this species in Societas Entomologica, n. 7, July, 1897, gives no indication as to what species it is allied.

225. Hypolycæna sipylus, Felder.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). This species is apparently very common in Lombok.

226. Hypolycæna erylus, Godart.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Pagenstecher*).

227. Chliaria sp.

Bali (*Doherty*). A single male specimen received. Mr. Elwes notes that the blue coloration on the upperside of the forewing reaches the outer margin and comes nearer to the apex of the wing than in any other species of the genus possessed by him, and that it is perhaps a race distinct from *C. othona*, Hewitson.

228. Zeltus etolus, Fabricius.

Bali (*Doherty*).

229. Cheritra freja, Fabricius.

Bali (*Doherty*).

230. Horaga privigna, Fruhstorfer.

H. privigna, Fruhstorfer, Berl. Ent. Zeitsch., vol. xlii, p. 113 (1897).

Bali (*Doherty*), Lombok (*Fruhstorfer*).

231. *Horaga bellula, Fruhstorfer.

H. bellula, Fruhstorfer, Berl. Ent. Zeitsch., vol. xlii, p. 114 (1897).

Sambawa (*Doherty* and *Fruhstorfer*).

232. Marmessus ravindra, Horsfield.

Bali (*Doherty*).

233. Loxura atymnus, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty credits this species to Linnæus.

234. Araotes lapithis, Moore.

Bali (*Doherty*).

235. Deudorix epijarbas, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*). Mr. Fruhstorfer spells this genus "*Deudoryx*."

236. Rapala varuna, Horsfield.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. H. H. Druce has recently shewn that *R. orseis*, Hewitson, is a synonym of *R. varuna*, Horsfield. Mr. Doherty records both species in his paper, a pair of *R. orseis* from Sambawa, and *R. varuna* from Sambawa and Sumba. Whether or no he obtained two distinct species of *Rapala* of this group in Sambawa it is impossible to say without seeing his specimens.

237. Rapala schistacea, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

238. Rapala pheretima, Hewitson.

Bali (*Doherty*).

239. Rapala suffusa, Moore.

Bali (*Doherty*). A single male obtained at 3,000 ft. elevation.

240. Rapala jarbas, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Doherty spells this name "*iarbas*," which is classically more correct.

241. Rapala deliochus, Hewitson.

Lombok (*Fruhstorfer*).

242. Sinthusa amba, Kirby.

Bali, Sambawa? (*Doherty*). Mr. Doherty says he obtained a species of *Sinthusa* in Sambawa, which was probably the above-named species, though it may have been *S. malika*, Horsfield, = *S. amata*, Distant.

Family PAPILIONIDÆ.

Subfamily Pierinæ.

243. Leptosia xiphia, Fabricius.

Bali (*Wallace* as *Pontia nina*, Fabricius), Bali, Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Fruhstorfer refers to this species from Lombok as *L. xiphia chlorographa*, Hübner. This latter species appears to us to be a pure synonym of *L. xiphia*. In his Bali paper he spells the name "*ziphia*."

244. *Delias aglaia, Linnæus.

Sambawa (*Doherty*). Mr. Doherty says that he saw two specimens

of *D. pasithoë*, Linnæus, var. (which species according to Heinrich Ritter von Mitis, who has monographed the genus, is a synonym of *D. aglaia*), on Mount Haruhasa in Sambawa at nearly 5,000 feet elevation.

245. Delias oraia, Doherty.

Lombok (*Fruhstorfer*), Sambawa (*Doherty*). This species has been figured by Grose Smith and Kirby in Rhop. Ex., pl. *Delias* iii, figs. 5, 6, *male*; 7, *female* (1893), and by Dr. Pagenstecher in Jahr. des Nass. Ver. für Natur., vol. xlix, p. 123, n. 30, pl. ii, fig. 8, *female* (1896). Von Mitis and Pagenstecher both treat this species as a var. of *D. descombesi*, Boisduval, but in our opinion it is quite distinct. Dr. Pagenstecher's reference to Messrs. Grose Smith and Kirby's plate is incorrect, it is pl. iii, not pl. iv.

246. Delias glauce, Butler.

Bali (*Doherty*). Agrees exactly with specimens in our collections from Sumatra, except that the black border on the upperside of the hindwing in the male is a little narrower. It was originally described from Borneo.

247. Delias hyparete, Linnæus.

Bali (*Doherty* and *Mitis*), Lombok (*Mitis*), *D. hyparete* varietas ? Sumba (*Pagenstecher*). We have not seen specimens of this species from Lombok. Our Bali examples agree with Cramer's figure of *D. autonoë* in having on the underside of the hindwing a complete series of seven vermilion spots placed between the veins in the middle of the marginal black band.

248. *Delias fasciata, Rothschild.

D. fasciata, Rothschild, Nov. Zool., vol. i, p. 662, n. 4 (1894); id., Grose Smith and Kirby, Rhop. Ex., pl. *Delias* iv, fig. 1, *female* (1895); id., Pagenstecher, Jahr. des Nass. Ver. für Natur., vol. xlix, p. 124, n. 31, pl. iii, fig. 3, *male* (1896); *D. hyparete*, Linnæus, varietas ?, Pagenstecher, Jahr. des Nass. Ver. für Natur., vol. xlvii, p. 56 (1894).

Sumba (*Rothschild*, *Grose Smith* and *Kirby*, *Pagenstecher*). Dr. Pagenstecher in his second paper says that he named this species *D. hyparete* var. *sumbana* in his first paper, but we cannot find any reference to that name therein, though he describes *D. hyparete*, varietas ?, see n. 247 above. In his reference to his figure, p. 170, he gives Grose Smith instead of Rothschild the credit of having first described *D. fasciata*. The species does not appear to be in any way allied to *D. hyparete*, as stated by Pagenstecher in his first paper. Messrs.

Grose Smith and Kirby suggest that *D. fasciata* is the female, and *D. sambawana*, Rothschild, is the male of one and the same species. But their figure of the female of *D. fasciata* is very different from Rothschild's figure of the female of *D. sambawana*.

249. Delias sambawana, Rothschild.

D. sambawana, Rothschild, Nov. Zool., vol. i, p. 662, n. 5 (1894); vol. ii, pl. viii, fig. 5, *female* (1895); id., Grose Smith and Kirby, Rhop. Ex., pl. *Delias* iv, figs. 2, 3, *male* (1895).

Sambawa (*Doherty*, *Rothschild*, *Grose Smith* and *Kirby*).

250. *Delias pagenstecheri, Fruhstorfer.

D. pagenstecheri, Fruhstorfer, Soc. Ent., n. 14 (1895); idem, id., Berl. Ent. Zeitsch., vol. xli, p. 398 (1897); *D. peribœa* [sic], Pagenstecher (*nec* Godart), Jahr. des Nass. Ver. für Natur., vol. xlix, p. 122, n. 29, pl. i, fig. 4, *male* (1896).

Sambawa (*Fruhstorfer* and *Pagenstecher* as *D. peribœa*, sic!) From Dr. Pagenstecher's figure of this species it appears to be quite distinct. In the text, p. 123, he says that he has figured a female, but at p. 170 he says a male; the latter is probably correct.

251. Delias minerva, Fruhstorfer.

D. minerva, Fruhstorfer, Soc. Ent., n. 14 (1896); idem, id., Berl. Ent. Zeitsch., vol. xli, p. 395, pl. ix, fig. 10, *female* (1897); *D. sambawana minerva*, id., Berl. Ent. Zeitsch., vol. xlii, p. 8 (1897).

Lombok (*Fruhstorfer*). Mr. de Nicéville has a pair of this species only from Lombok. The female agrees precisely, except in being smaller, with the figure of the same sex of *D. sambawana*, Rothschild; the male, however, differs from the figure of the same sex of that species on the underside of the hindwing in having the ground-colour of a paler yellow, less orange, shade, the black band within the submarginal series of vermilion lunules and the marginal black band both much broader, and the submarginal series of vermilion lunules half as broad.

252. *Delias livia, Fruhstorfer.

D. peribœa [sic] *livia*, Fruhstorfer, Soc. Ent., n. 14, p. 115 (1896); idem, id., Berl. Ent. Zeitsch., vol. xli, p. 396 (1897); idem, id., Berl. Ent. Zeitsch., vol. xlii, p. 8 (1897).

Lombok (*Fruhstorfer*). We have not seen this species, nor has it been figured. As *D. minerva*, Fruhstorfer, as well as *D. livia*, are at best but local forms of *D. peribœa*, Godart, from Java, we think it somewhat improbable that both should occur in one small island and be distinct species.

Mr. Fruhstorfer refers to *D. wallacei*, Rothschild, from Bali. The species was originally described from Celebes, and Mr. Fruhstorfer probably meant that island when referring to it. Dr. A. G. Butler in his revision of the genus, Ann. and Mag. of Nat. Hist., sixth series, vol. xx, p. 153, n. 35 (1897), sinks *D. wallacei* under *D. peribæa*.

Von Mitis records *D. egialea*, Cramer, from Bali and Lombok with a query. We have seen no specimen of this species from either island, and doubt its occurrence there.

253. Catopsilia crocale, Cramer.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Neither Doherty nor Fruhstorfer obtained the species in Bali, though it certainly must occur there. We consider *C. crocale* and *C. catilla*, Cramer, which are usually kept distinct, to represent one and the same species. Wallace records it from Lombok as *Callidryas hilaria*, Cramer, which is another synonym. Mynheer M. C. Piepers in his latest paper on the Migrations of Butterflies (Nat. Tijd. voor Ned.-Indië, vol. l, pp. 198–253 (1897) says on page 219 that "*Papilio*" *pomona*, Fabricius, is the oldest name for this butterfly. Both *P. pomona* and *P. crocale* were described in 1775, but as Cramer alone figured it, we prefer to use his name.

254. Catopsilia scylla, Linnæus.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer* and *Wallace*), Sambawa and Sumba (*Doherty*). Mr. Doherty credits this species to Boisduval.

255. Catopsilia pyranthe, Linnæus.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). Dr. Pagenstecher records this species in his second paper as *C. chryseis*, Drury, which is a synonym we believe of *C. pyranthe*. Hitherto it has not been recorded from Sumba, though it almost certainly occurs in that island.

256. Terias hecabe, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). In Dr. A. G. Butler's recent revision of the genus *Terias* from the Old World (Ann. and Mag. of Nat. Hist., seventh series, vol. i, pp. 56-82 (1898), no species is given from the islands treated on in this paper. Our numerous specimens of the *T. hecabe* group from Lombok agree so exactly with examples taken by de Nicéville in Hongkong of the wet-season form that no words can convey any impression as to the slight

almost imperceptible, differences that exist between them. But Dr. Butler restricts *T. hecabe* to Hainan Island, and to Southern China from Hongkong Island to Tonkin, so he would probably give another name to our specimens from the Lesser Sunda Islands. In our opinion wet-season *T. hecabe* from South China agrees with and is indistinguishable from the only form of *T. hecabe*, which is the rainy-season one, found in Lombok, and doubtless also in Bali, Sambawa and Sumba.

257. *Terias blanda, Boisduval.

Lombok (*Fruhstorfer*), Sambawa (*Pagenstecher*). Mr. Doherty says he obtained " several varieties " of *T. hecabe*, Linnæus, in Sambawa and Sumba, which may include this species, but we have failed to recognise it from the description.

Dr. A. G. Butler places *T. blanda* as a synonym of true *T. hecabe*, which, as noted above, he restricts to Hainan, South China and Tonkin. But he keeps *T. anemone*, Felder, (with *T. mandarina*, De Lorza, *T. mariesii*, Butler, *T. hybrida*, Butler, and *T. connexiva*, Butler, as synonyms), as a distinct species from Japan, Chusan Island, and round the south-eastern coast of China from Shanghai to Hongkong. The dry-season form of the Hongkong *T. hecabe* is undoubtedly *T. mandarina*, and de Nicéville in Hongkong and Japan has caught every intergrade between it and the broadly black-bordered *T. hecabe*. Therefore de Nicéville thinks that Dr. Butler's *T. anemone* is undoubtedly the same species as true *T. hecabe*.

258. Terias silhetana, Wallace.

Lombok (*Fruhstorfer*). We have three females of this easily recognised species from Lombok. Dr. Butler says that *T. tecmessa*, de Nicéville, is a dry-season form of *T. silhetana*, Wallace. This is not so, if anything, it is a wet-season form with broad black borders. But in North-Eastern Sumatra, from whence the types of *T. tecmessa* came, no dry-season forms of *Terias* occur, as the seasons are practically wet ones all the year round.

259. *Terias vallivolans, Butler.

Bali (*Fruhstorfer* as " *Eurema* " *vallivolans*), Lombok (*Fruhstorfer* as *Terias vallivolans*). This species was described by Butler in Ann. and Mag. of Nat. Hist., fifth series, vol. xi, p. 420, n. 71 (1883), from Mindanao in the Philippine Isles. Mr. Distant in Rhop. Malay., p. 306, n. 4, pl. xxvi, fig. 17, *male* (1885), describes and figures it from Singapore, and says that he " Considers it probable that this is but another variety of *T. hecabe*." Since the above was in type Dr. Butler has placed *T. vallivolans* under *T. silhetana*, Wallace.

260. *Terias sari, Horsfield.

Sambawa, Sumba (*Doherty*).

261. Terias tilaha, Horsfield.

Bali (*Doherty*).

262. *Terias lombokiana, Fruhstorfer.

Lombok (*Fruhstorfer*). Compared with *T. tominia*, Vollenhoven, which latter is allied to the last-named species.

263. Terias diversa, Wallace.

Bali (*Doherty*). We have a single female only, which has the ground-colour white, by which character Dr. A. R. Wallace has differentiated the female of this species. It is probably only an occasional aberration of *T. hecabe*, Linnæus, in which species such "sports" are not very rare. Dr. Butler restricts this species to the Philippines, though Dr. Wallace gave seven distinct localities for it.

264. Terias sp.

Sambawa (*Doherty*). A single male in Elwes' collection. It is allied to *T. andersonii*, Moore, and as in that species has black cilia, but has all the markings on the underside fewer in number than usual. It may be that species, but from a single example it is difficult to say. Dr. Butler places *T. andersonii* as a synonym of *T. suava*, Boisduval, which latter is, in his opinion, the Indian representative to *T. hecabe*, Linnæus. In Watson's and de Nicéville's opinion *T. andersonii* is a very distinct species.

265. *Terias vagans, Wallace.

Lombok (*Fruhstorfer*). Originally described from Formosa and North India. This species appears to be nothing but *T. læta*, Boisduval, the underside "yellow." Capt. E. Y. Watson in his revision of the Indian species of *Terias* was unable to recognise it with certainty. In de Nicéville's collection are specimens from Dehra Dun in N.-W. India, which agree very well with the original description, and are only a seasonal form of *T. læta*. Dr. Butler places it as synonym of *T. læta*.

266. Terias libythea, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). Recorded by Doherty from Sambawa as *T. drona*, Horsfield, which is a synonym.

267. *Terias harina, Horsfield.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

268. Ixias reinwardtii, Vollenhoven.

Bali (*Doherty* and *Wallace*), Lombok (*Wallace* and *Fruhstorfer*), Sambawa (*Doherty*), Sumba (*Pagenstecher*). Mr. Elwes notes:—"I have this species from Bali, Lombok, Sambawa and Flores. The males vary but little. The female, however, from Sambawa is small, with some orange coloration on the forewing and a trace of yellow on the hindwing on the upperside, whilst those from Bali are orange-lemon or white on the forewing, without any suffusion on the hindwing. The name of *I. kühni*, Röber, is given in the British Museum collection to specimens from Bali, but I consider *I. kühni* to be a synonym of *I. reinwardtii*. [With reference to this last remark, both sexes of *I. kuehni* are figured from Wetter; it is an excellent species, and quite distinct from *I. reinwardtii*.—*L. de N.*] *I. venilia*, Godart, is probably [certainly —*L. de N.*] another species. It has both wings yellow on the upperside, and according to Fruhstorfer is confined to East Java."

269. *Ixias baliensis, Fruhstorfer.

I. baliensis, Fruhstorfer, Societas Entomologica, n. 7 (1897); id., Berl. Ent. Zeitsch., vol. xlii, p. 9 (1897).

Bali (*Fruhstorfer*). Is this really distinct? It was described from a single male. Mr. Fruhstorfer says it is intermediate between *I. reinwardtii*, Vollenhoven, and *I. kuehni*, Röber.

270. *Ixias venilia, Godart.

Sumba? (*Doherty*), Sumba (*Pagenstecher*). Mr. Doherty records a species near *I. pirene* (*pyrene*), Linnæus, from the Sumba coast, several times seen, but no specimen taken. Dr. Pagenstecher records *I. venilia* from Sumba, which is probably the same species.

271. Huphina temena, Hewitson.

Lombok (*Wallace* and *Fruhstorfer*), Sambawa (*Doherty*), Sumba (*Pagenstecher*).

272. *Huphina coronis, Cramer.

Bali (*Fruhstorfer*). Probably the same species as the next, "*Papilio*" *coronis* having been described from China and the Coromandel Coast.

273. Huphina corva, Wallace.

Bali (*Wallace* and *Doherty*), Lombok (*Fruhstorfer*).

274. *Huphina vaso, Doherty.

Lombok (*Fruhstorfer*), Sambawa (*Doherty*, *Oberthür*). This species has been figured by M. Oberthür in Études d'Entomologie, vol. xix, p. 5, pl. iii, fig. 18, *male* (1894), as *Pieris* (*Huphina*) *vaso*. Dr. Pagenstecher in his second paper records this species from Sambawa as "*Pieris*" *nerissa*, Fabricius, which is a totally different species. Mr. Fruhstorfer records it from Lombok as *H. corva vaso*.

275. Huphina judith, Fabricius.

Bali (*Doherty* and *Frukstorfer*).

276. *Huphina eirene, Doherty.

Sambawa (*Pagenstecher*), Sumba (*Doherty*). Dr. Pagenstecher in his second paper places this species under "*Pieris*" *amalia*, Vollenhoven.

277. Huphina naomi, Wallace.

Lombok (*Wallace* and *Fruhstorfer*), Sambawa (*Doherty*). Dr. Pagenstecher in his second paper places this species under "*Pieris*" *amalia*, Vollenhoven, which is, in de Nicéville's opinion, a synonym of *Huphina lea*, Doubleday. *H. naomi* is quite distinct from *H. lea*. Some of our females of *H. naomi* from Lombok and one from Sambawa respectively are very dissimilar, that sex from the former island being usually extremely dark on both surfaces, so that the white ground-colour of the wings is greatly obliterated, though others again are almost as light as our Sambawa specimen. One might say that the darkest females from Lombok are twice as dark as the light female from Sambawa. Till large series of both sexes of all the species of *Huphina* from all the islands can be compared, it is impossible to be sure how many distinct species or what seasonal forms occur. In India *H. nerissa*, Fabricius, and its local race *H. phryne*, Fabricius, are subject to extensive seasonal dimorphism, the form flying in the rainy-season being extremely dark, while that flying in the dry-season is very light. Whether this phenomenon occurs in the Malayan Archipelago or not we are unable to say.

278. *Huphina julia, Doherty.

Sambawa (*Pagenstecher*), Sumba (*Doherty* and *Oberthür*). This species has been figured by Doherty, by M. Oberthür in Études d'Entomologie, vol. xix, p. 5, pl. iii, figs. 11, *male*; 17, *female* (1894), as *Pieris* (*Huphina*) *julia*, and by Dr. Pagenstecher in Jahr. des Nass. Ver. für Natur., vol. xlix, p. 119, n. 20, pl. i, fig. 2, *male* (1896), as *Pieris julia*.

279. Huphina mentes, Wallace.

Lombok (*Wallace* and *Fruhstorfer*), Sambawa (*Doherty*). Dr. Pagenstecher records this species from Sambawa in his second paper as "*Pieris*" *pitys*, Godart, originally described from Java, and figured from thence by Lucas, but given from Timor only by Dr. A. R. Wallace. Mr. Fruhstorfer says that *Pieris synchroma*, Röber, from Flores and Alor, both sexes of which are figured, and *Pieris pitys*, Snellen (*nec* Godart), from Flores, are synonyms of *H. mentes*. Mr. Fruhstorfer keeps *H. pitys*, Godart, and *H. mentes*, distinct, while Mynheer Snellen places *P. mentes* as a synonym of *P. pitys*. This group of the genus is a very difficult one, and till long series of both sexes from all the islands are brought together and compared, the confusion at present obtaining cannot be avoided.

280. Huphina tamar, Wallace.

Bali (*Wallace* and *Doherty*).

281. Belenois java, Sparrman.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*), Sumba (*Pagenstecher*). Recorded by Wallace from Bali and Lombok as *Pieris coronea*, Cramer, which is a synonym.

282. Appias albina, Boisduval.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Under *Appias paulina*, Cramer, a species strictly confined to Ceylon, Mr. Doherty has the following note:—"Two forms [of the male] of this very puzzling group occurred both in Sumba and in Sambawa. One was all white, with only a slender dark marginal line, resembling *A. albina* [this is typical *A. albina*]. The other had the hindwing and the apex of the forewing bright ochreous-yellow below, resembling *A. lankapura*, Moore, but without the dark apex [on the upperside of the forewing. In de Nicéville's opinion *A. lankapura* is a synonym of *A. paulina*, and is therefore found only in Ceylon]. It generally had a black or gray discal spot on the forewing." Dr. Wallace records white females [de Nicéville's Form I] from Lombok under "*Tachyris*" *paulina*, Cramer. In Lombok three forms of the female occur, the first is white on both surfaces, the second is white above and mostly chrome-yellow below, the third is primrose-yellow on both surfaces. Mr. de Nicéville calls the wholly white female Form I, and our Lombok females agree well with the figures of "*Catophaga neombo*, Boisduval," in Moore's Lep. Cey., vol. i, pl. 1, figs. 3*a*, 3*b*, *female* (1881). The female which is white above and mostly chrome-yellow below,

de Nicéville calls Form II, and it is figured by Moore in Lep. Cey., vol. i, pl. li, figs. 1, 1*a*, *female* (1881), as the female of *Catophaga lankapura*, Moore, though all the black markings in the Lombok variety are not as strongly developed as in the Ceylonese form figured. The female which is primrose-yellow on both surfaces de Nicéville calls Form III, and it has been figured from Java in Horsfield and Moore's Cat. Lep. Mus. E. I. C., vol. i, pl. ii*a*, fig. 3, *female* (1857), as *Pieris neombo*, Boisduval, and is almost certainly the *Tachyris albina*, Boisduval, ab. *flava* [*flavia*, Fruhstorfer, sic!] of Röber, Tijd. voor Ent., vol. xxxiv, p. 282 (1891), from Flores, Kisser, Wetter and Letti. It is not known if all three forms of the female occur also in Bali, Sambawa and Sumba, but it is probable that they do. It must be understood that the figures referred to above in Lep. Cey. do not actually portray our Lombok specimens, but they are given here to indicate the form of coloration displayed by them.

283. Appias leis, Hübner.

Appias eurosundana, Grose Smith, Nov. Zool., vol. ii, p. 75 (1895); *Tachyris sawela*, Fruhstorfer, Soc. Ent., vol. xi, n. 14, p. 115 (1896); idem, id., Berl. Ent. Zeitsch., vol. xli, p. 390, pl. ix, fig. 8, *female* (1897); *Tachyris eurosundana sawela*, id., Berl. Ent. Zeitsch., vol. xlii, p. 10 (1897).

Lombok (*Fruhstorfer* and *Doherty*), Sambawa (*Doherty* and *Grose Smith*), Sumba (*Pagenstecher*). Besides the two synonyms of *A. leis* given above, others in de Nicéville's opinion are *Pieris galathea*, Felder; *Pieris amasene*, Boisduval [*nec* Cramer]; *Pieris agave*, Felder; *Pieris zoe*, Vollenhoven; *Tachyris urania*, Wallace; *Tachyris jacquinotii*, Wallace [*nec* Lucas]; *Tachyris alope*, Wallace; *Catophaga roepstorffii*, Moore; and *Tachyris mata*, Kheil. Dr. Pagenstecher records *A. leis* in his second paper as *Tachyris zoe*, Vollenhoven, from Sumba. Like *A. albina*, Boisduval, the female of this species is trimorphic. We have received a good series of both sexes from Lombok, three females are Form I, with the broad black band on the upperside of the forewing not bearing the usual five white spots, and the underside being white, this form having been named ab. *umbratilis*, Fruhstorfer, in Berl. Ent. Zeitsch., vol. xli, p. 392 (1896), vol. xlii, p. 10 (1897); and three specimens are Form II, with the underside of the hindwing yellow, which is the ab. *sawela*, Fruhstorfer; Form III, with both wings on the upperside yellow, has not been received, but not improbably it is the ab. *citronella* of Fruhstorfer, described in Berl. Ent. Zeitsch., vol. xli, p. 392 (1896), vol. xlii, p. 10 (1897). Mr. de Nicéville does not propose to criticise Mr. Fruhstorfer's remarks on *Appias albina*, Boisduval, and *A. leis*. The latter gentleman has quite failed to understand those

species, but his position is not singular, probably no two writers think similarly on the subject, and it is only recently since de Nicéville has written up the genus for the fourth volume of his "Butterflies of India, Burmah and Ceylon" that he has himself come to any definite conclusion regarding them.

284. Appias lyncida, Cramer.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). Dr. A. R. Wallace records it from Bali and Lombok. Mr. Doherty notes, "I have dubiously recorded *Appias lyncida* from Sambawa." We have since received it from that island.

285. *Appias pandione, Hübner.

Lombok (*Fruhstorfer*).

286. *Appias leptis, Felder.

Lombok (*Fruhstorfer*).

287. Saletara nathalia, Felder.

Sambawa, Sumba? (*Doherty*). Mr. Doherty notes that from Sumba he obtained a female which he supposed to be that of *A.* (*Saletara*) *nathalia*.

288. Hebomoia glaucippe, Linnæus.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Mr. Fruhstorfer records this species from Bali and Lombok as *H. javäensis*, sic! and *javaënsis*, sic!, Wallace, a species described in 1863, as "*Iphias*" *glaucippe*, loc. var. (3) *javanensis*, from Java, but as Dr. Wallace dropped that name in his paper "On the *Pieridæ* of the Indian and Australian Regions," published in 1868, we have followed him, as our specimens from Java, Bali and Lombok hardly differ from the typical race from India.

289. Nepheronia valeria, Cramer.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Wallace*, *Doherty* and *Fruhstorfer*), Sambawa, Sumba (*Doherty*). Our numerous specimens from Bali, Lombok and Sambawa agree well with the original figure of the male of this species from Java. Mr. Fruhstorfer in Berl. Ent. Zeitsch., vol. xlii, p. 11 (1897), has described *N. valeria sundana* from Lombok, but we do not consider the Lombok race to be distinct from the Javan. Mr. Doherty says that a different species of *Nepheronia* is, he thinks, found in Sumba.

Subfamily Papilioninæ.

In this subfamily we have followed the order given by the Hon. Walter Rothschild in "Novitates Zoologicæ," vol. ii, p. 167 (1895), in his paper entitled "A Revision of the *Papilios* of the Eastern Hemisphere, exclusive of Africa." As Elwes is not prepared to accept Rothschild's trinomial nomenclature for local races, de Nicéville has raised all such to full specific rank while indicating in all cases what Mr. Rothschild considers to be the parent species.

290. Troides naias, Doherty.

Sambawa, Sumba (*Doherty*). Treated by Rothschild as a subspecies of *T. haliphron*, Boisduval, the typical form of which is from Celebes and the adjacent small islands. Mr. Rothschild does not consider that "*Ornithoptera*" *naias*, var. *sambavana*, Doherty, from Sambawa, can be separated from typical *O. naïs* from Sumba. Rothschild spells the name "*sambawanus*." Dr. Staudinger has described and figured this species as *Ornithoptera socrates* from Sambawa and Wetter. Mr. de Nicéville has males only from Sambawa and Sumba, which cannot be distinguished one from the other.

291. Troides helena, Linnæus.

Bali (*Doherty*). The Bali form appears to agree with the typical one from S.-E. Sumatra and Java. Given full specific rank by Mr. Rothschild.

292. *Troides propinquus, Rothschild.

Sambawa (*Rothschild*). Described by Rothschild as a subspecies of *T. helena*, Linnæus.

293. Troides sagittatus, Fruhstorfer.

Ornithoptera helena sagittatus, Fruhstorfer, Soc. Ent., vol. xi, n. 15, p. 123 (1896); idem, id., Berl. Ent. Zeitsch., vol. xli, p. 377, pl. ix, fig. 1, *female* (1897); idem, id., Berl. Ent. Zeitsch., vol. xlii, p. 11 (1897).

Lombok (*Fruhstorfer*). We have seen males only of this subspecies of *T. helena*, Linnæus. They have no white internervular streaks on the forewing on the upperside whatever. On the hindwing the costal black band extends as far as the middle of the subcostal interspace, that is to say, there is a large golden-yellow streak anterior to the first subcostal nervule; there is usually only one submarginal black spot in the first median interspace, which is joined to the marginal black lunule, but in one specimen there is a small round isolated spot in

the first subcostal interspace. In de Nicéville's collection is a single male which agrees with the aberration *pluto* of Felder in having the hindwing reddish-yellow ("old gold") instead of clear yellow. This specimen has three pairs of faint whitish streaks between the veins on the underside of the forewing, but none on the upperside. The ordinarily-coloured males do not differ from typical *T. helena*, Linnæus. This subspecies if distinct is based on the female sex, the one figured by Fruhstorfer, which we have not seen.

294. *Papilio oreon, Doherty.

Sumba (*Doherty*). Given full specific rank by Mr. Rothschild.

295. Papilio aristolochiæ, Fabricius.

Bali (*Doherty* and *Fruhstorfer*). Our Bali males have four small white spots beyond the discoidal cell of the hindwing as in some Javan specimens of typical *P. aristolochiæ*, some Javan specimens have them twice as large, others but little larger; one Bali specimen has these spots very faint on the upperside. The Bali form approaches the Sambawan local race, which has only three small spots. Mr. Rothschild gives this species full specific rank.

296. Papilio austrosundanus, Rothschild.

Sambawa (*Doherty*). Mr. Doherty says that the Sambawa form (which he calls *P. aristolochiæ*, Linnæus, but Fabricius first described it) is "normal," but as it has only three discal small white spots on the hindwing, it deserves a subspecific name. Mr. Elwes notes: "The male of the Sambawa form is exactly like one from Camorta in the Nicobar Isles in my collection. If this form must have a varietal name, I think *P. camorta*, Moore, should be used." Described by Mr. Rothschild as a local race of *P. aristolochiæ*, Fabricius. Mr. de Nicéville has not seen specimens from Sambawa.

297. Papilio lombockensis, Rothschild.

P. aristolochiæ lombockensis, Rothschild, Nov. Zool., vol. iii, p. 322, n. 1 (18th September, 1896); *P. aristolochiæ lombokensis*, Fruhstorfer, Soc. Ent., vol. xi. p. 108 (1st October, 1896).

Sawela, Lombok Island, 1,000-2,000 feet (*Doherty*), East Lombok, 2,000 feet (*Fruhstorfer*). This form, which is treated by Mr. Rothschild as a subspecies of *P. aristolochiæ*, Fabricius, has no white spots on the disc of the hindwing, and is usually known as *P. antiphus*, Fabricius. Mr. Rothschild in Nov. Zool., vol. ii, p. 252 (1895) notes that his specimen of *P. aristolochiæ antiphus*, Fabricius, from Lombock,

captured by Wallace, is of small size, but does not differ from certain Bornean and Sumatran individuals. Subsequently, however, he elected to give the Lombok form subspecific rank. Mr. Elwes notes that "*P. antiphus* is quite as good a species as many more, unless you can show a complete series of intergrades between typical *P. aristolochiæ*, Fabricius, and *P. antiphus*, Fabricius." [Mr. Rothschild in treating *P. antiphus* as a local race or subspecies of *P. aristolochiæ* does not say he has seen all intergrades between the typical forms of both, but he notes that the latter has "two, three, four, or five discal spots to the hindwing," which is very close indeed to the former which has no white spots]. "I can distinguish my Lombok from Borneo, Sumatra and Nias *P. antiphus* by the shape of the anal spot on the underside of the hindwing, and if it is a var., it is a var. of *P. antiphus*, and not of *P. aristolochiæ*."

298. Papilio nyx, de Nicéville.

P. (*Pangerana*) *nyx*, de Nicéville, Ann. and Mag. of Nat. Hist., sixth series, vol. xx, p. 225 (1897).

Bali (*Doherty*). This species is allied to *P. nox*, Swainson, from Java. Females only have been obtained.

299. Papilio sumbanus, Fruhstorfer.

Sambawa, Sumba (*Doherty*), Sumba (*Fruhstorfer*). Mr. Doherty records this species as *P. erichthonius*, Cramer, which is the correct classical spelling of *erithonius*, a synonym of *P. demoleus*, Linnæus. Mr. Fruhstorfer treats this species as a local race of *P. demoleus*. Mr. Rothschild records it from Sambawa and Sumba as *P. demoleus sthenelinus*, Rothschild. We have seen no Sambawa specimens, they may be distinct from the Sumba form, in which case Rothschild's name can be used for that local race, the type of which is from Alor Island. The description of *P. sumbanus* has not been published up to the date of passing final proofs of this paper. In some of his letters to de Nicéville, Fruhstorfer says he has named it *P. pictus*.

300. Papilio demolion, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*). Given full specific rank by Mr. Rothschild.

301. Papilio palawanicus, Staudinger.

Bali (*Doherty*), Lombok (*Fruhstorfer*). Mr. Rothschild treats this species as a local race of *P. helenus*, Linnæus. From typical *P. helenus*

it appears to constantly differ in having the series of submarginal red lunules on the underside of the hindwing in the male incomplete.

302. Papilio biseriatus, Rothschild.

Sambawa, Sumba (*Doherty*). Mr. Rothschild gives this species subspecific rank under *P. helenus*, Linnæus.

303. Papilio memnon, Linnæus.

Bali (*Doherty* and *Fruhstorfer*). Given full specific rank by Mr. Rothschild.

304. Papilio merapu, Doherty.

Sumba (*Doherty*). Treated by Mr. Rothschild as a local race of *P. memnon*, Linnæus.

305. Papilio clathratus, Rothschild.

Lombok (*Fruhstorfer* and *Doherty*), Sambawa (*Doherty*). This also Mr. Rothschild places under *P. memnon*, Linnæus, as a local race.

306. Papilio umbrosus, Rothschild.

Sambawa (*Rothschild*). This is a local race according to Mr. Rothschild of *P. canopus*, Westwood, from Northern Australia. It is one of the most marked instances amongst the few that exist in the islands treated in this paper of an Australian element in the butterfly fauna. Mr. Rothschild has figured it in Nov. Zool., vol. ii, p. 342, pl. viii, fig. 3, *male* (1895).

307. *Papilio sumbanus, Rothschild.

Patadala in Sumba (*Rothschild*). Mr. Rothschild treats this as a local race of *P. canopus*, Westwood. The female has been figured by Dr. Pagenstecher in his second paper.

308. Papilio theseus, Cramer.

Bali (*Doherty* and *Fruhstorfer*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). A local race of *P. polytes*, Linnæus, according to Mr. Rothschild. Mr. Doherty spells the latter name "*polites*," which is classically more correct. The female from Lombok is of the Form II, which mimics *P. aristolochiæ*, Fabricius. Mr. Rothschild notes that "The Sambawa examples have the white band of the hindwing rather narrower than specimens from other localities."

309. *Papilio neumoegeni, Honrath.

Sumba (*Doherty*). This species was described by Doherty as *P. maremba*, but Honrath's name has priority. The latter writer erroneously gave the habitat as Sambawa; it is found only in Sumba. M. Oberthür has figured the male type example and described the female in "Études d'Entomologie," vol. xix, p. 2, pl. iii, fig. 12, *male* (1894), under Doherty's name. Dr. Pagenstecher has written a note on it in Ent. Nach., vol. xxii, pp. 151–153 (1896). Mr. Rothschild gives it full specific rank.

310. Papilio peranthus, Fabricius.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*), var., Sambawa (*Doherty*). Mr. Rothschild separates off the Lombok and Sambawa forms as a local race as *P. peranthus fulgens*, Röber, in which Mr. Fruhstorfer follows him as far as the Lombok race goes. We are unable, however, to trace any differences in either sex between typical *P. peranthus* from Java, and *P. fulgens* from Bali, Lombok and Sambawa. In writing to de Nicéville Mr. Fruhstorfer says that the Lombok and Sambawa form will be described as *P. transiens*, Fruhstorfer, and the Alor form as *P. peranthus phœbus*. The Tanah-Djampea form is *P. peranthus intermedius*, Snellen. None of these local races can in our opinion be separated from the parent form.

311. Papilio alcibiades, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). One specimen from Bali in de Nicéville's collection agrees very closely with Eimer's figure and description of his *P. antiphates javanicus* from Java, and both the Java and Bali forms are markedly different from the continental form in having the marginal markings on the upperside of the hindwing entirely densely black, instead of black mixed with grey powdering; other specimens from Bali are normal. Mr. Rothschild treats this species as a local race of *P. antiphates*, Cramer.

312. *Papilio hermocrates, Felder.

Sumba (*Pagenstecher*). Mr. Rothschild considers this species to be a local race of *P. aristeus*, Cramer.

313. Papilio sallastius, Staudinger.

Sambawa (*Doherty*). Treated by Mr. Rothschild as a local race of *P. eurypylus*, Linnæus. Dr. Pagenstecher has figured it in Jahr. des Nass. Ver. für Natur., vol. xlix, p. 112, n. 12, pl. i, fig. i, *male* (1896).

314. Papilio eurypylides, Staudinger.

Lombok (*Fruhstorfer* as *eurypilus*, sic! *eurypilides*, sic!) Sambawa, Sumba (*Doherty*). Treated by Mr. Rothschild as a local race of *P. eurypylus*, Linnæus. Dr. Pagenstecher has figured it in Jahr. des Nass. Ver. für Natur., vol. xlix, p. 112, n. 13, pl. i, fig. 3, *male* (1896). Mr. Rothschild notes that in Sambawa both *P. sallastius* and *P. eurypylides* fly together.

315. Papilio axion, Felder.

Bali (*Doherty*). Treated by Mr. Rothschild as a local race of *P. eurypylus*, Linnæus. A single specimen received, which agrees exactly with Javan examples.

316. Papilio sarpedon, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). Mr. Rothschild records *P. sarpedon adonarensis*, Rothschild, from Tambora in Sambawa, but says that the four specimens he possesses "Stand exactly intermediate between *P. adonarensis* and Indian *P. sarpedon* in the shape of the hindwing." Our single specimen from Sambawa is absolutely inseparable from typical *P. sarpedon*. The Bali and Lombok form is also typical *P. sarpedon*, though Mr. Fruhstorfer refers the Lombok form to *P. sarpedon jugans*, Rothschild. If Mr. Rothschild's local race *P. adonarensis* is retained, it must be restricted to specimens from Adonara Island, from whence the type was obtained.

317. *Papilio jugans, Rothschild.

Waingapoeng in Sumba (*Doherty*). Treated by Mr. Rothschild as a local race of *P. sarpedon*, Linnæus.

318. Papilio agamemnon, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

319. Papilio exilis, Rothschild.

Sambawa, Sumba (*Doherty*). Treated by Mr. Rothschild as a local race of *P. agamemnon*, Linnæus.

Family HESPERIIDÆ.

In this family we have followed the order given in the late Capt. E. Y. Watson's paper in Journ. Bomb. Nat. Hist. Soc., vol. ix, pp. 411-437 (1895), entitled "A Key to the Asiatic Genera of the *Hesperiidæ*."

320. Celænorrhinus leucocera, Kollar.

Bali (*Doherty*).

321. Celænorrhinus spilothyrus, Felder.

Bali (*Doherty*). We have three specimens from Bali and one from Mount Arjuno in Java which may constitute a distinct local race of this species. They are, however, only distinguishable from typical *C. spilothyrus* by the almost complete disappearance of the spots on the underside of the hindwing. They have the costal spot of the forewing on the upperside white instead of yellow, thus resembling Malabar and not Ceylon specimens.

322. Celænorrhinus saturatus, Elwes and Edwards.

C. saturatus, Elwes and Edwards, Trans. Zool. Soc. Lond., vol. xiv, p. 120, pl. xviii, fig. 6, *male*; pl. xxii, figs. 5, 5*a*, *tegumen* and *clasp of male* (1897).

Bali (*Doherty*).

323. Coladenia dan, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

324. Satarupa diræ, de Nicéville.

Bali (*Doherty*). Originally described in the genus *Daimio*.

325. Tagiades japetus, Cramer.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*), Sambawa, Sumba (*Doherty*). This species was described as new from Sambawa and Sumba by Doherty as *Tagiades brasidas*, which is a synonym of the widely-spread *T. japetus*.

326. Tagiades sambavana, Elwes and Edwards.

T. sambavana, Elwes and Edwards, Trans. Zool. Soc. Lond., vol. xiv, p. 143, pl. xx, fig. 10, *male*; pl. xxii, fig. 14, *clasp of male* (1897).

Bali, Sambawa (*Doherty*). Generally this species resembles *T. atticus*, Fabricius, but has in the male the tibial pencil of hairs brown instead of yellowish-white, and a different form of clasp, which has been figured; and sometimes (not always) with two white points placed one above the other near the apical third of cell 1*a* (the submedian interspace) in the forewing on the upperside.

327. *Tagiades atticus, Fabricius.

Lombok (*Fruhstorfer*). This may be the last-named species.

328. Odontoptilum angulata, Felder.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*), Sambawa (*Doherty*). *Achlyodes sura*, Moore, is a synonym of this species. Mr. de Nicéville has caught *O. angulata* in Hongkong, from whence it was originally described, and these Chinese specimens agree absolutely with Indian ones.

329. *Odontoptilum hyperides, Doherty.

Sambawa (*Doherty*). Described as *Abaratha hyperides*.

330. *Odontoptilum sp.

Sumba (*Doherty*). Mr. Doherty says that a species allied to his *Abaratha hyperides*, but more like *A. angulatus* [sic !], Felder, was found in Sumba, but no specimens have survived.

331. Caprona syrichthus, Felder.

Bali, Sumba (*Doherty*).

332. Sancus pulligo, Mabille.

Bali (*Doherty*).

333. Koruthaialos xanites, Butler.

Bali (*Doherty*). *K. hector*, Watson, has the orange band on the upperside of the forewing narrow, *K. xanites* has it broad.

334. Koruthaialos hector, Watson.

Bali (*Doherty*).

335. Suastus tripura, de Nicéville.

Bali (*Doherty*). Originally described in the genus *Tagiades*.

336. *Suastus chilon, Doherty.

Sumba (*Doherty*).

337. Taractrocera archias, Felder.

Bali (*Doherty*), Lombok (*Doherty* and *Fruhstorfer*), Sambawa, Sumba (*Doherty*). This species is better known as *Taractrocera nigrolimbatus*, Snellen.

338. Ampittia maro, Fabricius.

Bali, Sambawa, Sumba (*Doherty*). Mr. Doherty notes that he is doubtful of the identity of his Sambawa and Sumba specimens with the Indian form.

339. Isma vulso, Mabille.

Pamphila vulso, Mabille, Ann. Soc. Ent. Belg., vol. xxxvii, p. 55 (1893).

Bali (*Doherty*). Originally described from Java. The type of the genus *Isma* is *I. obscura*, Distant, which is congeneric with the more recently described "*Isoteinon*" *iapis*, de Nicéville, that species having been taken by Watson to be the type of his genus *Lophoides*. The genus *Isma* has seven years priority over *Lophoides*. Messrs. Elwes and Edwards incorrectly give *Isma* as a synonym of their genus *Scobura*.

340. Zographetus durga, Plötz.

Sambawa (*Doherty*).

341. Inessa ilion, de Nicéville.

I. ilion, de Nicéville, Journ. A. S. B., vol. lxvi, pt. 2, p. 571, n. 25, pl. iv, fig. 33, *male* (1897).

Lombok (*Fruhstorfer*).

342. Matapa aria, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

343. Matapa shalgrama, de Nicéville.

Bali (*Doherty*).

344. Erionota thrax, Linnæus.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

345. Gangara thyrsis, Fabricius.

Bali (*Doherty*).

346. Hidari irava, Moore.

Bali (*Doherty*).

347. Notocrypta feisthamelii, Boisduval.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). This is probably the species Mr. Doherty recorded from Sambawa and Sumba as *Plesioneura restricta*, Moore.

348. Notocrypta albifascia, Moore.

Bali (*Doherty*). Originally described from Hatsiega in Upper Tenasserim. Mr. de Nicéville has not seen specimens from Bali, so does not know if they are typical or not.

349. Udaspes folus, Cramer.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

350. Cupitha purreea, Moore.

Bali (*Doherty*).

351. Telicota augias, Linnæus.

Lombok (*Fruhstorfer*), Sambawa (*Doherty*).

352. Telicota bambusæ, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

353. Telicota (Padraona) gola, Moore.

Bali, Sambawa, Sumba (*Doherty*).

354. Telicota (Padraona) dara, Kollar.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). This is probably the species recorded from Sambawa and Sumba by Doherty as *Tilicota* [*Telicota*] *mæsoides*, Moore. This last de Nicéville has never been able to satisfactorily descriminate, but it is almost certainly a synonym of *T. dara*, and Messrs. Elwes and Edwards sink it under *T. dara*.

355. * Ocybadistes marnas, Felder.

Sumba (*Pagenstecher*). Originally described from Amboina. It is unknown to de Nicéville, but certainly is not a true *Pamphila*. Messrs. Elwes and Edwards place it in the genus *Telicota*, but Mr. Heron in 1894 made a new genus for its reception.

356. Halpe homolea, Hewitson.

Bali (*Doherty*).

357. Halpe zema, Hewitson.

Bali (*Doherty*). Mr. Doherty says that an unidentified species of *Halpe* occurs in Sambawa.

358. Parnara (Chapra) mathias, Fabricius.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

359. Parnara (Chapra) brunnea, Snellen.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

360. Parnara (Chapra) sinensis, Mabille.

Bali (*Doherty*). Better known perhaps as *Chapra prominens*, Moore, which is a synonym.

361. Parnara conjuncta, Herrich-Schäffer.

Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*). Given by Doherty under its synonymic name, *Parnara narooa*, Moore.

362. Parnara contigua, Mabille.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa (*Doherty*). This species is better known as *Parnara toona*, Moore.

363. Parnara colaca, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*).

364. Parnara guttatus, Bremer and Grey.

Bali (*Doherty*).

365. *Parnara tulsi, de Nicéville.

Lombok (*Fruhstorfer*). Mr. Doherty says that "Two unidentified species of *Parnara* occur in Sumbawa," one of which is probably *P. contigua*, Mabille.

366. Ismene ionis, de Nicéville.

Lombok (*Fruhstorfer*), Sambawa (*Doherty*). This species was originally described from Western Java and Sambawa in Journ. Bombay Nat. Hist. Soc., vol. ix, p. 403, n. 49, pl. Q, fig. 61, *male* (1895). The female from Lombok (hitherto undescribed) is the same expanse as the male; on the upperside of both wings the base is clothed with ochreous instead of orange-yellow setæ; the forewing has no sexual brand; on the underside the hindwing has the discal band much broader than in the male, and pure dazzling white instead of purplish-white. Mr. Fruhstorfer has sent two males and a female from Lombok to de Nicéville.

367. *Ismene iluska, Hewitson.

Sumba (*Pagenstecher*). Dr. Pagenstecher records this species from Sumba as *J. illusca* [sic!]. *Ismene iluska* was originally described from Macassar in Celebes. It is probable that Dr. Pagenstecher's specimens are really *I. ionis*, de Nicéville. See No. 366 *ante*.

368. Hasora badra, Moore.

Bali (*Doherty*), Lombok (*Fruhstorfer*), Sambawa, Sumba (*Doherty*).

369. *Hasora (Parata) chromus, Cramer.

Sumba (*Doherty*). Recorded by Doherty as *Parata malayana*, Felder, which is said to be a synonym of *H. chromus*, Cramer.

370. Hasora (Parata) simplicissima, Mabille.

Bali, Sambawa? Sumba? (*Doherty*). Mr. Doherty says that a second species of "*Parata*" occurs both in Sambawa and Sumba which he did not identify. It is probably the present species.

371. Bibasis sambavana, Elwes and Edwards.

B. sambavana, Elwes and Edwards, Trans. Zool. Soc. Lond., vol. xiv, p. 305, pl. xxvii, fig. 96, *clasp of male* (1897).

Sambawa (*Doherty*)

372. Badamia exclamationis, Fabricius.

Bali, Sambawa, Sumba (*Doherty*).

373. Rhopalocampta subcaudata, Felder.

Bali (*Doherty*).

On the manifestation of Social Instinct in the Common Babbler (Crateropus canorus).—*By* B. B. Osmaston, *Indian Forest Service. Communicated by the Natural History Secretary.*

[Received November 25th; Read December 1st, 1897.]

The existence of a "moral sense" in animals is so often questioned that I feel bound, in justice to the birds, to put on record an account of a scene of which I was a witness, which seems to prove that in some kinds of birds at least social instinct at all events is present in a highly developed form.

In the summer of 1895 I caught and trained a young "Shikra," the Indian Sparrow Hawk, (*Astur badius*), to catch Mynahs and other small birds. One morning in August, while walking round my garden with the Shikra on my hand I saw a party of "seven sisters" (the Jungle Babbler, *Crateropus canorus*) feeding on the ground. At my approach they all flew up into a tree, and as I came still nearer they began to fly across one by one to another tree. I threw the Shikra up at one of them, which she succeeded in capturing after a short chase, bringing it down to the ground in her firm grip. The rest of the Babblers,